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OF

OTOLOGY

EDITED IN ENGLISH AND GERMAN

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VOL. XXIV. No. 1.

ARCHIVES OF OTOLOGY.

HISTORICAL REMARKS UPON THE OPERATION FOR EXPOSING THE TYMPANIC CUPOLA-SPACE [ATTIC] AND THE MASTOID ANTRUM.

By Dr. ARTHUR HARTMANN, Berlin.

Translated by Dr. A. Duane, New York.

(*With one figure in the text.*)

IN the last volume of these ARCHIVES (p. 337), Holmes gives a pretty complete sketch of the works relating to the artificial opening of the mastoid process without exposure of the tympanic cavity. His description of the more recent developments in the surgery of the middle ear, however, shows so many deficiencies, that we may perhaps be justified in seeking to make it more complete.[1]

The stimulus impelling us to extend and amplify the operative methods which we had been in the habit of employing upon the basis of Schwartze's publications, must certainly be attributed to Küster, whose procedure was also taken up by v. Bergmann soon after Küster's paper was published.

Küster in his essay upon "The Principles of Treating Suppurations in Cavities with Rigid Walls," etc,[2] expressed his views as follows: "The method of operating proposed by Schwartze, although practised by most otologists, I cannot regard as satisfactory from a surgical point of view"; and again: "A rational surgical procedure must start from the principle of making a wide and thorough opening in the bone, removing everything that is diseased, and exposing the source of suppuration so freely that the pus cannot possibly meet with any obstacle to its exit."

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[1] An exhibition of the facts in the case has also been given by Zaufal (*Arch. f. Ohrenheilk*, xxxvii., p. 33.

[2] *Deutsch. med. Wochenschr.*, No. 13, 1889.

With regard to the operative procedures, Küster makes a distinction between the cases in which there is a primary affection of the mastoid process, and in those in which there is a primary suppuration of the middle ear with or without a secondary implication of the bone. In the former case a simple chiselling of the mastoid process is done, and everything that is diseased is removed. In the case of primary suppuration of the tympanic cavity, if syringing and the removal of granulations and of the ossicles do not suffice to produce a cure, " we must decide to do chiselling of the mastoid, and must obviously do it earlier than has hitherto been the practice; and our decision will be accelerated if we all believe, as I certainly do, that the operation is in itself devoid of danger."

" In such cases the difficulty consists in determining the indications for the operation. When is the right time to do it? In my opinion it is at the time when the inflammation is beginning to pass beyond the limits of the tympanic cavity, as shown by the presence of periostitis of the mastoid or of cerebral symptoms—vertigo, headache, and fever."

In such cases Küster has recommended a preliminary thorough-going removal of the posterior wall of the auditory canal as an adjunct to the operation of chiselling the mastoid. " If the ossicles and a part of the drum-membrane are still left, the auditory canal ought to be opened as close to the external aspect of the drum-membrane as possible. Then I usually pass a drain through the auditory canal, one end of it projecting from the wound, the other from the external ear. It is true that in this case, the exposure of the middle ear is but incomplete; nevertheless there are some less severe cases which are frequently cured in this way. But if the tympanic cavity is filled with granulations, and if the drum-membrane and ossicles are in large part or entirely destroyed, I try to get down and into the middle ear, so as to be guided by my eye in removing with the sharp spoon everything that is diseased. Then either a drain is passed through the ear, as in the previous case, or the deep wound in the bone after it has been thoroughly disinfected is tamponed with iodoform gauze. The dressing is changed infrequently, and the routine use of irrigations appears altogether superfluous, since the suppuration is usually trifling after the operation."

E. v. Bergmann in his monograph, *The Surgical Treatment of Brain Diseases* (2d ed., 1889, p. 95), says: " Certainly in the majority of cases of suppuration from the middle ear, careful syringing through the external auditory canal will accomplish our object—that is, effect a permanent cure. But when a cure is delayed, when the drum-membrane is destroyed and the ossicles have disappeared, and when the suppuration has extended to the mastoid cells and affected the bones themselves, much more may be done than to simply chisel out the mastoid process and to keep on industriously syringing the ear with the modern antiseptic solutions. Our task, then, is to liberate the pus and procure for it a permanent exit. To drain the abscess-cavity and let it alone are the best means for effecting this object. By our injecting and our irrigating, particles of pus—that is to say, phlogogenic substances derived from the focus of suppuration,—may easily be pushed or driven into the non-suppurating, but soft portions of the brain adjoining the latter. The stream of carbolic or boric acid becomes in this way a means of propagating the inflammation. How often have I seen simple wounds of the soft parts, which would certainly have healed beneath a scab if left to themselves, inflame upon the fifth or sixth day, merely because they became the object upon which a physician armed with irrigator or syringe had to expend his energy. In modern otiatrics I have seen a longer and stronger application of the syringe employed than I myself would have dared to undertake in a widely gaping wound in the skin."

On p. 95 he says: " Between the upper wall of the external auditory canal and the lower and lateral border of the middle fossa of the skull, lies a pretty thick layer of bone into which the chisel can penetrate as far as the bony frame of the drum-membrane, without opening the cranial cavity. We can convince ourselves of this fact by making parallel to the base of the skull a saw-cut placed over the external auditory meatus (?). The superior limit is formed by the columnar projection which the obliquely directed root of the zygomatic process presents above the ear, a projection which extends above the external auditory meatus as far as the external surface of the mastoid process. The external ear is circumscribed by a semilunar incision concentric with the antihelix, and distant 2 *cm* from it, and extending to the outer surface of the outer table of the mastoid. The branches or trunk of the posterior auricular artery, if they happen to be injured, are ligated. Next the periosteum is stripped back superiorly, postero-superiorly, and posteriorly from the border of the external auditory canal, so that the circumference of the latter is everywhere denuded. Then a slender, sharp chisel is introduced directly beneath the ridge upon the root of the zygomatic process, above mentioned and successive laminæ of bone are chiselled off, the chisel at the same time being carried farther and farther back till it reaches the mastoid process, and from this point carried forward again in an oblique direction so as to penetrate the pars tympanica, which forms the posterior wall of the external meatus. The precaution of directing the chisel obliquely and of chipping off the laminæ of bone by prying them up with the instrument introduced flat-wise into the bone, will prevent us from penetrating too deeply and from injuring in any way the facial nerve in the Fallopian canal. By removing in this way the posterior and upper wall of the external meatus, we can form a funnel-shaped hole, into which we can introduce the finger as far as the tympanic cavity, and thus remove from the latter with the sharp spoon the remains of the ossicles, the indurated granulations, and the cheesy and stagnating pus."

Although several objections must be made, both from an anatomical and a pathological standpoint, to the propositions enunciated by these two surgeons, yet their exhortation to liberate pus and procure for it a permanent exit, has impelled otologists to take up anew the question of chiselling the mastoid, and our operative methods have in consequence been thrown into new channels.

It can scarcely be denied that the results were unsatisfactory in many of the mastoid operations as formerly made. The reason for this was that, on the one hand, the morbid processes in the middle ear and particularly in the attic were not made accessible to treatment, and consequently were not cured, and that, on the other hand, when the opening made in the mastoid closed, the mucous membrane in the interior began to secrete again, and thus the old state of things set in once more, giving rise to chronic suppuration or to the deposition of cheesy or cholesteatomatous masses. There were [quite a number of] cases in which the chiselling had to be done again one or two years after an apparent cure.

The proposal to chisel down through the posterior wall of the auditory canal into the tympanic cavity seemed to me most objectionable, for from the result of my dissections I could not but consider it inapplicable on account of the danger to which it gave rise of injuring the facial nerve and the external semicircular canal.

It cannot be doubted that a considerable number of facial paralyses have been produced as the result of Küster's proposition, and at the International Congress an American colleague said, when he visited me: "I have been only two days in Berlin, and yet I have seen three facial paralyses following the chiselling of the mastoid, although in America I never saw one."

After I had enlarged my collection of horizontal sections through the temporal bone so as to determine by comparison and measurement the propriety of removing the posterior wall of the auditory canal, I presented my specimens in the section of otology of the Congress of Scientists held at Heidelberg in 1889.

I then, according to the report contained in the *Transactions* of the Congress, expressed the following views:

"While, on the one hand, the results of the author's measurements warn us to limit the depth to which we penetrate, in the operation of chiselling as ordinarily done, these new experiments, on the other hand, actually urge us to penetrate still deeper. It is now recommended (by Küster and v. Bergmann) to get access to the tympanic cavity by chiselling away the posterior wall of the auditory canal. The question whether in this way an entrance into the tympanic cavity can be effected without danger is answered by the author in the negative, since in many cases, according to the specimens which he presents, this cannot be done without injuring the external semicircular and facial canals. In some cases the former projects farther out than the latter."

"While the part of the tympanic cavity lying within the region of the drum-membrane is accessible from the auditory canal, the upper part of the tympanum, called by the author the cupola-space [attic] cannot be reached in all its parts even after the removal of the drum-membrane and ossicles. In order to effect a cure of the processes which take place in the cupola-space, and which include the formation of polypi and the deposition of inspissated or cholesteatomatous masses, this space must be exposed to view. This may be accomplished in various ways:"

"1. By cutting through the layer of bone which separates it from the auditory canal, and which is called by Walb the pars ossea of the drum-membrane. The author uses for this purpose an instrument which he calls a double-chisel,[1] and shows pieces of bone which had been removed by it."

"2. In chiselling the mastoid, the antrum is enlarged anteriorly so that an unobstructed view can be got into the cupola-space."

"3. The entire anterior wall of the antrum and the pars ossea of the drum-membrane are removed, and thus a free communication is effected between the antrum and cupola-space and the auditory canal."

"The choice as to which of these methods is adopted depends upon the nature of the process in the cupola-space."

At the Second Congress of North-German Otologists, held April 7, 1890, in Berlin, I presented one of the cases upon which I had operated, making a free communication between the auditory canal, on the one hand, and the cupola-space and mastoid antrum on the other. The report in regard to it[2] reads as follows: "In the patient presented, the

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[1] This instrument, which enables us to chip off small pieces of bone from the pars ossea even when the canal is narrow, is figured by Politzer in his *Text-book of Otology* (3d ed., 1893, p. 363) as a forceps-chisel made by Reiner. A similar instrument was recently recommended by Gellé.

[2] *Zeitschr. f. Ohrenheilk.*, xxi., 104.

operation had been performed by the reporter by detaching the auricle and carrying it forward, opening the antrum, and removing the bony wall separating the antrum from the auditory canal as far as Shrapnell's membrane (which was destroyed), *i. e.*, as far as the cupola-space. Through the opening thus made a drainage-tube was passed from the mastoid process to the auditory canal. After the tube had been removed, the posterior opening closed and suppuration ceased, while the gap which had been made in the postero-superior wall of the canal, and which extended from Rivini's segment (pars ossea of the drum-membrane) to the mastoid antrum, remained. This afforded a view of the antrum, and could enable one to wash out the latter at any time by means of the tympanic cannula."

In the Tenth Convention of South-German and Swiss Otologists, held at Nürnberg, May 25, 1890,[1] Zaufal reported as follows his method of operating by chiselling through the mastoid into the tympanum[2]: "Zaufal operates thus. He forms a triangular flap, including within its limits the auricle and the cartilaginous canal, by making an incision through the skin and periosteum from the tip of the mastoid process to the summit of the superior root of the zygomatic process, and from there carrying it perpendicularly along the latter almost to the anterior border of the auricle. The periosteum is stripped up with the raspatory and at the same time the membranous portion of the posterior bony wall of the auditory canal is detached." "An ordinary Luer's forceps suffices for removing the postero-superior wall of the auditory canal down to a certain depth. For removing the innermost parts of the inferior lamina of the horizontal portion of the pars squamosa, which also forms the external boundary of the atticus externus (Politzer), and upon whose inner surface is found the malleo-incudal joint, Zaufal uses a very slender Luer's forceps, with which it is possible to nip off this part in a single clip. Thus the cavity in which the malleo-incudal joint lies is exposed, and now we have the very important task of removing the malleus and incus, or any remains that may be present, with the forceps or with a sharp spoon," etc. "The external wound is then sewed up without introducing a drainage-tube."[1]

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[1] His first communication in regard to this was made at the Twelfth Session of the Association of German Physicians (Prague, April 18, 1890). Reported in *Prag. med. Wochenschr.*, April 30, 1890.

[2] *Zeitschr. f. Ohrenheilk.*, xxi., 130.

Later publications in regard to the operation of exposing the tympanic cavity are found fully cited in Holmes's paper and for them I may be permitted to refer to the latter. I will simply confine myself to adducing the results of my investigations upon this point.

By my anatomical investigations upon horizontal sections through the middle of the external auditory meatus, and by making vertical sections through the inner end of the meatus and perpendicular to the axis of the latter, I have sought to determine how far chiselling of the posterior wall of the meatus is associated with danger for the facial canal and for the labyrinth, and particularly for the semicircular canals.

From my determinations it resulted that, if chiselling is done through the posterior wall of the canal into the drum-cavity, the facial or semicircular canal may be wounded if the chiselling extends 1 to 4 *mm* back of the sulcus tympanicus. The conditions are best shown by the appended illustration.

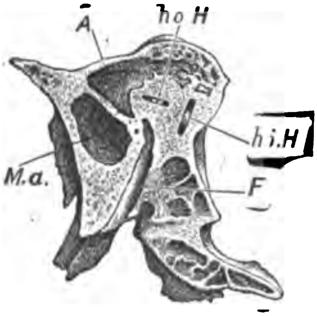

FIG. 1.

M. a. = meatus auditorius ; *F* = facial canal ; *A* = aditus ad antrum mastoideum ; *hi. H* = posterior vertical semicircular canal ; *ho. H* = horizontal semicircular canal.

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[1] Zaufal specially emphasizes the fact that he has already operated upon fourteen cases in this manner (*l. c.*, p. 50).

Apart from the quite unfavorable conditions which chiselling of the posterior wall of the auditory canal offers from an anatomical standpoint, I consider it from a clinical standpoint unnecessary (at least as regards the inner and lower part of the canal), since the lower part of the tympanic cavity is readily accessible to manipulation performed through the meatus. If necessary, the projecting edge of the sulcus tympanicus may be removed by the double gouge-forceps.

Very different are the conditions with respect to that portion of the tympanic cavity which lies above Rivini segment, and for which I have introduced the name of cupola-space [attic]. Here the carious-processes go on, and here are formed deposits of inspissated pus, cholesteatomatous masses, and granulations. While it is possible in some of these cases by washing with a tympanic cannula, by removing granulations, and by extracting the ossicles to effect a cure by manipulations conducted through the auditory canal, it seems requisite, in those cases in which a cure is not obtainable by this means, to supplement these measures by an operation, exposing the cupola-space, and, if necessary, the antrum as well.

In the specimens which I presented at the Tenth International Medical Congress in Berlin,[1] and which consisted of fifty horizontal sections made in macerated temporal bones through the middle of the auditory canal, the following dimensions were determined by measurement:

1. The distance of the spina supra meatum from (*a*) the facial canal, (*b*) the semicircular canals.

2. The distance of a point upon the surface of the mastoid situated 1 *cm* behind the spina supra meatum (site of election for operation) from (*a*) the facial canal, (*b*) the semicircular canals.

3. Distance of the sulcus tympanicus from (*a*) the facial canal, (*b*) the nearest semicircular canal.

4. Moreover, it was determined whether the facial canal or one of the semicircular canals projects farther towards

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[1] *The Operation of Exposing the Cupola-Space, and the Anatomical Relations which bear upon the Possibility of Injuring the Facial Nerve and the Labyrinth in the Operation of Chiselling out the Mastoid.* Berlin, 1890.

the outside upon the face of the section, and whether either of these canals does or does not project as far externally as does the sulcus tympanicus.

It was determined that the distance from the spina supra meatum to the facial canal was in 18 cases 15 *mm* or less, in 2 cases 12 *mm*, and in 2 cases 13 *mm*, and that the distance from the spina supra meatum to the external semicircular canal was in 8 cases 15 *mm* or less, and in 5 cases 14 *mm*.

The distance from the site of election for the operation (1 *cm* behind the spina supra meatum) to the facial canal was in 10 cases 20 *mm* or less, and in 4 cases 18 *mm*; and the distance from the same point to the external semicircular canal was in 11 cases 20 *mm* or less, and in 3 cases 18 *mm*.

Hence it follows that in chiselling the mastoid we may strike the facial or the semicircular canal when we have gone in only 12 or 14 *mm* from the spina supra meatum, or 18 *mm* from the site of election for operation.

The danger of doing harm by going in too deep is less for the facial than for the semicircular canal. In our 50 sections we found in 18 the semicircular canal projecting farther exteriorly than the facial canal.

The superior semicircular canal participates in the formation of the inner wall of the mastoid antrum, and usually projects into the antrum itself, while the facial canal, which also projects into the latter, forms the boundary between the mastoid antrum and the cupola-space. Hence, if we go too deeply into the antrum we shall injure the labyrinth.

The distance from the sulcus tympanicus to the facial canal was in 1 case 1 *mm*, in 2 cases 2 *mm*, and in 13 cases 3 *mm*; and to the semicircular canal was in 1 case 4 *mm*, in 4 cases 5 *mm*.

These relations are best seen in sections made perpendicular to the axis of the auditory canal and through the inner end of the latter.

In 15 cases either the facial or the semicircular canal projected exteriorly as far as the posterior part of the sulcus tympanicus.

As has been already mentioned, it follows from these measurements that if we chisel through the posterior wall into the tympanum, the facial or semicircular canal may be injured, if our chiselling is carried from 1 to 4 *mm* behind the sulcus tympanicus.

I cannot close this paper without emphazing a fact that has very frequently occurred in my experience. I find that, without going into an elaborate operation for chiselling into the posterior wall of the canal and exposing the tympanic cavity completely, a permanent cure may often be obtained by the employment of the tympanic cannula, the removal of granulations by the curette, the extraction of the ossicles, and in some cases by removing a portion of Rivini's segment with the forceps-chisel. This is possible even in cases when the necessity of making the more elaborate operation has been explained to the patient. On the other hand, if we keep within the bounds which are imposed by the anatomical conditions present, the operation of exposing the cupola-space and the antrum is less dangerous than a chiselling of the mastoid as it used to be done, and, moreover, it is the only operation that can with certainty effect a cure of a middle-ear suppuration which is not relieved by the other means mentioned above.

A CONTRIBUTION TO THE TECHNIQUE OF THE OPERATION OF TREPHINING FOR CEREBRAL ABSCESSES OF AURAL ORIGIN.

By Dr. W. HANSBERG, of Dortmund, Gy.

Translated by Dr. S. E. Allen, Cincinnati, O.

(*With Plates III.-VII., of vol. xxv., German Edition.*)

THE operation of trephining the skull for cerebral abscesses of otitic origin is properly of recent date, although we find in the older literature two cases, one by Moraud (1751), and the other by Le Roux (1844), in which such abscesses were successfully operated upon. Here, however, there was perforation of the bony covering, and the widening of the fistula and laying open the abscess was all that was necessary to bring about a cure.

In the year 1886 we find recorded in literature for the first time, the fact of an otitic brain abscess, with intact dura and skull bones, being operated upon according to a regular plan. The honor belongs to Schede of having preceded all other surgeons in this matter. Since then the publications of these cases have piled up, and Heiman, in his paper on the subject, mentions thirty-two abscesses of aural origin seventeen of which were trephined, successfully.

The literature of this subject has increased greatly in later years, and the pathology, diagnosis, and treatment have been treated of exhaustively, but nevertheless it would seem to me that the technique of the operation has not received the attention which it deserves. Above all, an exact consideration of the anatomical conditions met with in trephining has been neglected. It is evident that this knowledge of the anatomy is pre-eminently necessary. If we desire to do brain surgery, we must know not only which place on the skull is most advantageous for trephining, but also the boundaries within which we must keep the knife in the depth of the brain.

The anatomical conclusions stated in this paper are the results of dissections of thirteen cadavers and a number of hardened brains.

The methods of trephining employed in these cases of brain abscess of otitic origin are very numerous, taken in connection with the small number of operations performed. This is probably because we have as yet nothing upon which to base a localization of the abscess, and thus to determine the most fit place for the trephining.

In trephining for abscess of the temporal lobe, Bergmann bounds the operative field as follows: The upper border of the temporal lobe is formed by the fossa Sylvii, and above should in no case go. According to the general acceptation, this point approximately corresponds to the upper border of the squamous portion of the temporal bone. This upper limit can be marked off by a line drawn about 5 *cm* above the zygoma and parallel to it. The posterior border is marked by a line erected at the back edge of the mastoid process, perpendicular to a line connecting the lower edge of the orbit and the occipital tuberosity. The anterior border is formed by a second perpendicular, erected at the maxillary joint. The superior root of the zygoma runs as a ridge backward over the external meatus, and the lower limit of the opening must be at least 1 *cm* above this ridge.

Chauvel, who experimented on the cadaver, found that the temporal lobe was best gotten at from an opening immediately above the external meatus. More exactly defined, this spot is situated on a line drawn from the outer angle of the eye tangent to the top of the auricle. Its anterior and posterior boundaries are formed by two perpendiculars, erected, the one before and the other behind the auricle. Upon this horizontal line, just half-way between the two perpendiculars, lies the portion of the squamosal through which we come directly upon the temporal lobe at its middle convolution. The point lies behind the bifuraction of the middle meningeal artery.

Greenfield located the opening quite far forward, placing the trephine an inch above the zygoma. The button of bone removed consisted of a part of the pars squamosa and a small piece of the great wing of the sphenoid. On the inner surface there was a groove for a branch of the middle meningeal artery.

Schwartze operated 2½ *cm* above the upper border of the osseous meatus, and 1 *cm* posterior to an imaginary plumb line erected at the middle of the meatus.

With Jansen, the lower portion of the opening, which was about the size of a two-mark piece, lay ½ *cm* above the border of the osseous meatus, and the anterior border about in a plane with the forward wall of the meatus.

Schede chiselled open the mastoid and cut away the roof of the process, and then evacuated the abscess by means of a puncture into the brain, without using the trephine externally at all.

If we examine the individual cases, we find that all operators, with the exception of Chauvel, Schede, and Greenfield, trephined somewhat behind and above the osseous meatus, often indeed above the posterior bounding line given by Bergmann. According to statistics, cerebral abscesses of aural origin occur both in cerebrum and cerebellum.

According to Barr's figures, in 76 cases:

56 times in the middle lobe of the brain.
13 times in the cerebellum.
4 times in cerebrum and cerebellum.
2 times in the commissure.
2 times in the crura cerebelli.

According to Körner, in 100 cases:

62 times in the cerebrum.
32 times in the cerebellum.
6 times in both.

From facts mentioned in these statistics, we learn further that the great majority of cerebral abscesses occur in the temporal lobes and the fewest in the occipital lobes.

From the reports of other authors we can with certainty conclude that the temporal lobe and the cerebellum are almost exclusively the seat of abscesses of otitic origin.

We will take up first the temporal lobe. The temporal lobe is about eleven *cm* long and is situated in the middle cerebral fossa, with its anterior portion filling out the same, while posteriorly it rests upon the tentorium cerebelli. The lobe extends forward to the great wing of the sphenoid, posteriorly it runs continuously into the occipital and parietal lobes. It is separated from these last and from the frontal lobe by the Sylvian fissure.

We recognize three surfaces ; an outer, somewhat convex ; an inferior, slightly concave ; and an upper, which it possesses properly only at its anterior portion.

The outer surface consists of two antero-posterior grooves and three convolutions, the first, second, and third temporal convolutions. Only an angular portion of the lowest of these belongs to the outer surface, as it is to be considered as belonging almost entirely to the under surface. The outer surface lies throughout against the bony covering ; to a slight extent against the great wing of the sphenoid, against the pars squamosa in toto, and farther backward against a portion of the parietal bone.

The under surface consists of two long furrows and three convolutions: the above mentioned third temporal convolution, the gyrus occipito-temporalis, and farther inward the gyrus hippocampi, which last is continuous posteriorly with the gyrus linguæformis. This under surface anteriorly lies on the floor of the middle cerebral fossa, completely covering, therefore, the anterior surface of the pyramid clear to its point. The posterior part of this surface lies upon the tentorium cerebelli.

The upper surface is the smallest and becomes visible only on exposing and opening up the Sylvian fossa. This surface does not extend far back, only about 4 *cm*, but is of interest as upon it inwardly lies an important vessel, the art. fossæ Sylvii. This artery runs from forward and below, backward and upward, and supplies the adjacent parts.

The inner lower border of the temporal lobe, the gyrus hippocampi, borders on the thalamus opticus and optic tract and also on the pedunculus cerebri and the commissure. The upper inner portion of this lobe borders on different central ganglia, or may be said to continue into them, or we can say better, this portion borders on the lateral ventricle with its most important ganglia.

The lateral ventricles, two great cavities in the cerebrum, start 10 to 1·5 *cm* from the frontal lobes and extend backward into the occipital lobes. They lie directly under the white substance of the commissure, and are separated from each other in the middle by a thin dividing layer. They communicate through the foramen of Monro, a narrow opening, being all that is left of a large embryonic cleft. Through this the great vessels of the ventricles, the plexus chorioides laterales are connected together. The ventricle consists of an anterior, inferior, and posterior horn. In the anterior horn, forming the floor of the ventricle, we have the corpus striatum. This structure has a knob-like head and a thin tail, and extends diagonally from the front, backward and outward. It consists of gray and white substance, the first representing the caudate and lenticular nuclei. Somewhat backward and posterior from the corpus striatum lies the thalamus opticus. This enlarges posteriorly, forming the posterior tubercle or pulvinar, and its inner surface forms the outer wall of the third ventricle. Forward, between the caudate and lenticular nuclei, and farther back, between lenticular nucleus and optic thalamus, lies a mass of white substance, the so-called internal capsule. This is continuous backward and downward with the pedunculus cerebri. I mention the internal capsule especially because it represents the important point of union of the nerve fibres which come from the cerebrum, and which, continuing, pass through the pedunculi with fibres coming from the central ganglia, especially with those from the lenticular nucleus.

The lower horn begins just back and below the thalamus opticus, being partially covered posteriorly by that portion of the thalamus known as the pulvinar. This inferior horn extends forward 3 to 4 *cm*, reaching almost the anterior end of the thalamus. We find on the floor of this horn the cornu ammonis, arching from the rear and medially, outward and forward. Lying on the cornu ammonis, we have the great lateral choroidal plexus, which extends far into the end of the inferior horn of the ventricle. In the posterior horn, which begins just at the commencement of the anterior horn, we find the calcar avis (hippocampus minor) and the eminentia Meckelii (eminentia collateralis).

Of the ganglia forming the inner boundary of the temporal lobe, we have to consider especially the nucleus lentiformis and the thalamus opticus. The pedunculus cerebri and the pons also come into consideration to a slight extent. Of especial importance are the relations and situation of the lateral ventricles, above all of the inferior horns of these ventricles.

As is evident from the above the temporal lobe presents against the bone a surface 11 by 4 *cm* in extent. We have therefore considerable play in exposing it, and all the previously practical methods of operating have accomplished their purpose as far as laying bare the bone is concerned. There remains, however, for us to consider the situation and relations of the lower surface of the lobe to the central ganglia and to the lateral ventricle.

The whole chain of ganglia which are of interest to us, from the nucleus lentiformis to the pons, lie opposite the entire length of the ventricle, and we run the danger of causing unwished-for and dangerous damage in penetrating into the depths of the lobe. According to my measurements, the distance to the outer surface of the nucleus lentiformis, perpendicularly inward 3 *cm* anterior to a plumb line let fall at the margin of the external meatus, is about 4 *cm* (reckoned from the inner plate of the bone). Directly over the meatus, and slightly backward from it, the distance is also 4 *cm*; to the thalamus and internal capsule, 4 to 5 *cm* ; to the pons, 5 to 5½ *cm*. The upper border of the temporal lobe is about 1½ *cm* lower than the floor of the anterior horn of the ventricle. At the posterior portion of the thalamus, this difference in level disappears, and the inferior horn in its deepest portion can lie 2 to 3 *cm* deeper than the upper border of the lobe.

I should like to call especial attention to the fact that, according to my measurements, the size of the lateral ventricles varies greatly. Sometimes we find the anterior and posterior horns running far into the frontal and occipital lobes, respectively, so that the ventricles can be 15 *cm* long. In the posterior and inferior horns irregularities are often met with. In some cases I found the inferior horn extending far outward, so that the distance between it and the outer surface of the lobe was but 2½ to 3 *cm*. (I have never seen this distance greater than 4.*cm*.) On the other hand, the distance between the floor of the inferior horn, ordinarily 1½ to 2 *cm* above the pyramid, and the surface of the lobe was sometimes found to be but 1 *cm*. These measurements have of course only a relative value. In examining them we must take into consideration the size of the brain itself—that is, the breadth of the skull. In the measurements made by me on about 60 skulls, this breadth, in the region of the petrous bone, was from 12 to 15 *cm*; on an average, 13½ *cm*. I should like to mention also, that my examinations were on the adult brain; children's brains I have not examined. We can lay down the general rule: *That the smaller the skull, the nearer the inferior horn lies to the surface, and the greater care must be taken in penetrating into the depths of the lobe.*

If we make a frontal cut in the anterior portion of the temporal lobe, about corresponding to Greenfield's place for trephining, we strike the lenticular nucleus at the upper part of the section, but can only wound the ventricle if we cut far up. We must not forget, however, that the arteria fossæ Sylvii may come within the operative field and be injured. I would advise, therefore, that the knife be not directed too far forward. (Fig. 3, Plates III. and IV.)

If we make a frontal section in the plane of the outer meatus, which plane about strikes the commissura mollis, we determine the following: That if the knife is introduced 2 to 4 *cm* above the meatus, we strike the lenticular nucleus at a depth of 4 *cm*; that we reach with certainty the inferior horn and the choroidal plexus if the knife is not introduced too high; and that we run the danger of wounding these latter parts at a depth of from 2½ to 3 *cm.* (Fig. 2, Plates III. and IV.) As a rule, on a frontal section made about 1 *cm* anterior to the meatus, the lower horn is no longer to be found. Such a section, made 2 *cm* behind the meatus, strikes just between the posterior and inferior horns; at this place the ventricle lies opposite the temporal lobe, expanding out to a considerable extent in an upward and downward direction.

The question as to how deep we can penetrate into the brain without injury must be answered differently, according to the point on the lobe which we choose for trephining. If we operate according to Greenfield, we can penetrate 4 *cm* without fear of wounding the ventricle or the lenticular nucleus. If, on the contrary, we operate perpendicularly above the meatus, or somewhat behind, or in front of same, we are forced to go to different depths, according as to whether we pierce the lobe 1 to 2 *cm* over the meatus, or higher. If we choose our position high, in the neighborhood of the upper limit of the lobe, we reach the ventricle at from 4 to 5 *cm.* If we enter 2 *cm* above the meatus, we arrive at the inferior horn at a depth of from 2½ to 3 *cm*, and can wound the choroidal plexus. The statement of Von Bergmann, that one can penetrate into brain to a depth of from 4 to 5 *cm* without fear of injury, is, therefore, only to be accepted with limitations. Moreover, I may mention that injury of the central ganglia is not always necessarily dangerous, although it is always threatening and should be avoided as far as possible. Especially are we to avoid injury to the internal capsule and to the ventricle. I advise never to penetrate deeper than 3 *cm*, and am of the opinion that it will be almost never necessary to go deeper. If we keep in mind the fact that the general run of abscesses always arise in the temporal lobe, and then extend inward, we can see that they can be generally reached, if not too extensive, at a depth of 3 *cm.*

Are we able to diagnose an abscess in the temporal lobe? Can we from the symptoms locate such an abscess with certainty?

All authors agree that the diagnosis of a cerebral abscess is extremely difficult, and that its location is especially uncertain. Cases are frequent in which a cerebral abscess runs a latent course, and the post-mortem first gives us knowledge of a trouble which, during the life of the patient, had given rise to no marked disturbance. Such patients complain of troubles of quite a vague nature: headache, loss of appetite, nausea, etc., but lack every symptom from which the diagnosis of brain abscess can be made. In many cases the diagnosis can be made in all probability, but without our being able to determine its exact situation.

In looking over the cases of otitic brain abscess hitherto reported, I can recall but one in which the situation of the abscess was exactly given, namely, in the case of Jansen. Here it was possible to locate the abscess in the neighborhood of the thalamus opticus and internal capsule. In all other cases the diagnosis reads simply, "situation of the abscess in temporal lobe or cerebellum."

We know the reason why an abscess in the temporal lobe gives rise to such slight, and, for diagnostic purposes, useless symptoms, and the reason becomes clear to us if we consider the ordinary situation of the abscess in the lobe.

At the start, a temporal lobe abscess is situated in the white substance, and only on development does it extend to the cortex or central ganglia, as the case may be. The white substance is irrelevant, it simply is a means of connecting the fibres from the cortex with the internal capsule or periphery. Before this connection becomes completely destroyed the abscess has to reach an enormous size. Abscesses have even been observed which filled out the entire white substance, without having given rise to any functional symptoms. It is known that we can spoon out the white substance without observing functional disturbance. The abscess brings about paresis or paralytic functional troubles only when it attacks the cortex, either directly or indirectly, or the central ganglia—that is, when it attacks the portions of the brain bordering on the temporal lobe.

In order to understand this better we must consider more fully the physiology of the temporal lobe and the neighboring parts concerned. (Fig. 4, Plate V., and Fig. 5, Plates VI. and VII.)

Physiology places the centre for hearing in the temporal lobe; at least, we observe absolute loss of hearing on the opposite side after complete destruction of the cortex of this lobe. With abscess of the temporal lobe, loss of hearing in the opposite side, which can alone be due to destruction of the cortex, has not yet been observed. In the case of Jansen, the loss of hearing was due undoubtedly to exudation in the middle ear. An abscess in the temporal lobe would hardly cause an extensive destruction of the cortex, and so I think this symptom will almost never arise.

As is known, and as has been demonstrated in a number of cases, disturbances in speech are observed in abscess of the left temporal lobe, a symptom which points with the greatest probability to the situation of the abscess in this lobe. The centre for speech movements is situated in the left third frontal convolution. This centre lies so far from the temporal lobe that only an abscess occurring in the most anterior portion of the temporal lobe and extending over to the third frontal convolution or irritating the same, could bring about this disturbance. Wernicke has lately found that the centre for amnesic aphasia lies in the temporal lobe, in the posterior two-thirds of the first temporal convolution. When this symptom is present, we will have to locate the abscess high up in the temporal lobe; it may be it has started at this point, or it may have extended that far from the region of the petrous portion of bone.

We must above all hold fast to the fact that we cannot ascribe any influence on the motility or sensibility to the cortex of the temporal lobe. These centres are situated much higher, although it must be admitted that the centres for the facial and the hypoglossal border on the temporal lobe. Paralyses of the facial and also of the tongue have been observed in abscess of the temporal lobe, and it is possible that an abscess situated high up and in the anterior portion of the lobe could bring about these paralyses. In such a case, however, other paralytic symptoms would scarcely be lacking. The centre for speech movements borders directly on the island of Reil, which is looked upon as the centre for laryngeal movements, and the conducting fibres from it run from the third frontal convolution through the back edge of the island of Reil toward the inner capsule at the posterior inner border of the lenticular nucleus, and can therefore be readily interfered with. We must bear in mind, however, that irritation of the centre for speech movements and its conducting fibres can only be considered with abscess on the left side.

There are, as I have stated above, with the exception of the above centres, no motory or sensory centres in the temporal lobe. If we observe, therefore, those motory and sensory disturbances, which are the most important symptoms of a cerebral abscess, in connection with an abscess in the temporal lobe, this lobe itself cannot be made answerable for the symptoms. The abscess must either affect, by its extension, the motory and sensory centres which lie in the parietal lobe, or disturb the conducting fibres arising from the same. Moreover, I hold that, with abscess in the temporal lobe, both direct and indirect irritation of the motory or sensory centres can be excluded, with the exception of the centres for the facial and hypoglossal. The former centres are situated much too high, and it is only the conducting fibres that can come into consideration.

Suppose we take a temporal lobe abscess which has arisen primarily in the white substance, as is generally the case ; it is clear that the same by extension inwards must affect parts of the lesion which will as a consequence be followed by central disturbances. In the first place, the abscess, by extension inward, will strike the lenticular nucleus, and we know from physiology, that a lesion of this great bundle of ganglia can bring about opposite-sided motility disturbances. By still farther penetration, the abscess reaches the internal capsule ; this has a length of from 5 to 6 *cm* and can therefore be easily reached, in its entire length, by a temporal lobe abscess.

Now we know that the conducting fibres from the motory as well as from the sensory and psychical centres of cerebral cortex, pass through the internal capsule and from there into the pedunculus cerebri, commissure, etc., and it is evident that a lesion of these tracts will have the same results as a destruction of the respective centres. A necessary consequence of such lesion will be central disturbances which will be observed the more pronouncedly the more fibres there are destroyed or irritated. It has been determined that these nerve fibres pass collectively through the posterior shank of the internal capsule, the tract for the facial being farthest forward, following which come the motor fibres, and farthest back the sensory and psychical fibres. Accordingly, therefore, as an abscess presses against the back shank of the capsule and irritates it, we will have central disturbances of different kinds. We can seldom expect to see a total hemiplegia or hemianæsthesia develop as in an apoplectic lesion of the capsule which completely obliterates the conducting fibres, but must take into account that the abscess grows but slowly toward the capsule, and the fibres become irritated either directly by pressure or indirectly by an œdematous saturation of the neighboring tissues. Accordingly we observe focal disturbances of a moderate grade, convulsions, paresis of an arm with more or less reduction of sensibility, perhaps with paresis of a leg. A purulent breaking down of the posterior portion of the capsule is generally out of the question. In nearly every case, before this could develop, an occurrence arises which renders the death of the patient a consequent necessity, namely, the rupture of the abscess into the lateral ventricle.

It is known, and the clinical histories published up to now agree with this fully, that ordinarily death follows soon after focal appearances of motory or sensory nature arise. These symptoms, which allow of a certain diagnosis, were perhaps preceded by disturbances of a more general and vague nature, together with symptoms of intracranial pressure. These vague appearances make the diagnosis of cerebral abscess probable, but in the absence of focal disturbances do not allow of a certain diagnosis or of the localization of the abscess. An abscess situated in the temporal lobe above the petrous bone will, on extension inward, strike the outer wall of the inferior horn and push the same inward; only one situated high up in the lobe will strike the lenticular nucleus and subsequently irritate the internal capsule, the inferior horn also running the danger of being affected. If the abscess lies, however, far forward in the lobe, the inferior horn. is no longer concerned, and the abscess, in the direction inward and upward, will strike the lenticular nucleus and then the front shank of the internal capsule. In this case we will the easier miss characteristic symptoms, since we are nowadays doubtful whether the paralytic symptoms accompanying injury to the lenticular nucleus are not due to the participation of the posterior shank of the internal capsule. At least observations have taught us that the paralyses arising from lesions of the lenticular nucleus are always followed by a complete return of function, whereas those following a direct attack of the internal capsule can never be recovered from. It is possible for the abscess to cause the walls of the ventricle to fuse together, when it can press forward unhindered. It is more probable, however, that the abscess causes a great thinning of the wall of the inferior horn by its continued extension, and eventually bursts through the same, discharging the pus into the ventricle. Such cases have been frequently described *post mortem*, where focal symptoms of a motory or sensory nature had arisen shortly before death.

It seems striking to me that hemiopia has not been oftener observed in temporal lobe abscess. I recall but one case in which this symptom is mentioned, in the one reported by Jansen, although it was once made out by Janeway in a case of traumatic abscess in the occipital lobe, and once by Wernicke and Hahn in a case of tubercular abscess in the same lobe. In the first place, the fibres from the centre for sight in the occipital lobe run along the outer wall of the posterior horn to the optic nerve, and can therefore be touched by an abscess situated somewhat posteriorly. Then the optic tract arises from the thalamus opticus, and runs outward, downward, and forward, and surrounds the pedunculus cerebri. And finally, from physiology we know that lesions of the most posterior portion of the posterior shank of the internal capsule cause hemiopia. At any rate it is to be recommended to examine for hemiopia when we suspect an abscess in the temporal lobe. With focal disturbances in the motor, or especially the sensory areas—that is to say, with abscesses which irritate the internal capsule, we are not likely to miss this symptom.

From the above physiological data, I am convinced that in those cases of temporal lobe abscess which are accompanied by focal disturbances, it will be possible for us to make the diagnosis, and also to determine more exactly the situation of the abscess. If we find symptoms indicative of a cerebral abscess, such as headache, fever, vomiting, choked disc, etc., together with amnesic speech disturbances, in cases having a preceding or still existing otorrhœa, we may safely draw the conclusion that an abscess has developed in the left temporal lobe in the posterior two-thirds of the first temporal convolution. When suspicious of an abscess in the temporal lobe, if we find sensory and motor disturbances of the extremities, to which is added paralysis of the facial, we are in a position to localize the abscess. In this case, the abscess will be found in the region of the posterior shank of the internal capsule. With only partial disappearance of function in this group, it may be of motility or of sensibility, we are justified in locating the abscess in this region.

Facial nerve paralysis of the opposite side as the only focal symptom indicates that the abscess on extension to the internal capsule has irritated only the conducting fibres from the facial centre. This centre is situated at the bend of the capsule, and on account of the close proximity of the motor zone, other focal symptoms will not be slow in manifesting themselves. The abscess may lie well forward and upward in the temporal lobe, in which case we will observe paralysis of the hypoglossal soon following that of the facial, and also motor aphasia and disturbances in the laryngeal movements. If the facial paralysis shows itself on the diseased side, there must have arisen either an erosion of the Fallopian canal, as is ordinarily the case, or we have an intracranial process present, which affects the nerve in the skull cavity. With such symptoms, we should think first of all of a cerebellar abscess. I shall return to this later on.

If hemiopia appears as the only symptom of localized trouble, the abscess has attacked the conducting fibres from the sight centre, and we are to seek it farther backward and inward. In all other cases, we will find hemiopia combined with other focal symptoms. Of course the possibility is not excluded of an abscess at the bottom of the middle fossa extending far inward and exercising a pressure on the tractus opticus, and thus giving rise to this single symptom of hemiopia. Generally, however, we will observe other disturbances as well. Unfortunately, in the majority of cases of otitic brain abscess, those focal symptoms are absent by which the abscess could be located. We are to-day, however, as experience and the more recent works teach us, no longer required to trust to accident alone in finding the abscess. In spite of the absence of focal disturbances, we have indicative conditions which are able to give a determined direction to surgical interference in the concrete case. In the first place, experience teaches us that these abscesses in the temporal lobe generally appear after disease in the tympanic cavity, especially after disease in its upper part, in the antrum, and in the roof of the mastoid. Cerebellar abscesses, on the other hand, are more frequent after disease processes which occur in the region of the posterior fossa, especially after those which originate in the osseous sigmoid sulcus and in its neighborhood.

Körner, in 1889, published the records of ninety-one postmortems and observations on nine cases of trephining on the living, both showing that the great majority of abscesses complicating middle-ear suppurations are situated near the place of the primary trouble, and not seldom in evident connection with the same.

Lately, Jansen has arrived at the same conclusion. Among seven cases of cerebral abscess, six only being examined *post mortem*, the abscesses were directly connected with the purulent foci in the petrous portion by fistulae or by gangrenous tissue. In one case the connection was through a thrombosed vena auditiva interna and a purulently infiltrated acoustic nerve, and once there was no direct communication, but the abscess was separated from the dura and bone

a thin layer of discolored brain substance. In
at was operated upon, no direct connection be-
abscess and the petrous bone could be proven,
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ing of von Bergmann, that the abscess nearly
s at a distance from the primary disease, and sepa-
n the same by a layer of unaltered brain substance.
rgmann considers the veins the most ready carriers
fection, and he believes that there is first a throm-
d on some place in the course of the diseased vein
nt breaking down takes place with the formation of
scess. This view he bases on post-mortems which
he condition above cited in reference to the transverse
nd neighboring large venous trunks, and he believes
lf justified in attributing the same condition to the
in the brain itself. He says concerning this: "Cases
been described where the thrombus was found organ-
for a distance, while farther away soft purulent masses
d the calibre of the vein. Perhaps this condition is not
mportant in explaining the break of continuity between
ny deep brain abscesses and the place of the original sup-
ation." And farther on: "This view has more prob-
ility for the still unexplained origin of these abscesses than
e interrupted extension of the inflammation in the lym-
hatic and perivascular spaces. When the abscess has formed,
trace of the path along which it extended into the depth
s still to be perceived in the obliteration of the vein."

There can be no doubt that an abscess can occur far removed from the primary trouble, whichever way we designate as the most frequent, by thrombosis of the vessels or the conduction of micro-organisms through the lymph channels, and there is no reason why we cannot accept both ways. However, the post-mortems made up to date, and these alone are relevant, teach us that such an occurrence must be considered not the rule but the exception.

I give here, on account of its interest, the history of a case which I observed some months ago. It was one of subdural abscess, which offers an apt example of the origin of the discontinuity between deep abscesses and the place of the original suppuration. Moreover, only a few such cases of primary subdural abscess have been observed.

Frau H., thirty-six years old. No former ear trouble. Was taken in middle of October, 1892, with an acute left-sided middle-ear suppuration, with great discharge and violent pain in left side of head. Worse at night. Unable to localize the pain more definitely. Sent to me on 16th Nov., 1892. Drum behind and above bulged out with a narrow opening at the tip of the sack, out of which pus oozed. Mastoid not sensitive to pressure and not swollen. Left side of head not sensitive on percussion. Loud whispering heard close to the ear. Weber experiment, left.

Daily treatment did not relieve the pain and the suppuration continued unaltered. Beginning of January, the patient, who had not been to me for a week, sent for me as she was confined to bed. The same picture as before, only the mastoid is at its base slightly sensitive to pressure. Fever, on the days that I observed the patient, somewhat over 38°. Patient much reduced. No choked disc.

I intended to open the mastoid as I suspected a hidden intracranial focus of inflammation, but concluded to wait, since no appearances were present which pointed to disease in the mastoid cells.

Jan. 20th.—Œdematous swelling two fingers broad behind the articulation of the concha. Pain on pressure. No pain any longer on pressure over mastoid.

Jan. 24th. Operation. Pus found in swelling back of the ear. Fistula in bone corresponding to the posterior inferior angle of the parietal bone. A piece of bone the size of a two-mark piece removed and a fistula thus opened up and subdural abscess laid bare. Dura lined with spongy granulations. These removed with sharp spoon. Lively pulsation of the brain. Antrum opened thoroughly and found to contain no pus. Also no pus in mastoid. No connection could be found between abscess and antrum or middle ear, in spite of the fact that it was carefully sought for.

Headache disappeared soon after the operation. General condition good. Suppuration in ear soon subsided. May 10, 1893, trephine wound healed and patient dismissed cured. She states that off and on she suffers with slight headache; feels perfectly well otherwise. She looks splendid and has gained in weight. Her only complaint is that her memory is not so good as formerly, probably a sign that a portion of a cerebral convolution has been destroyed at the seat of the abscess.

Here we had to do with a subdural abscess that developed at a distance from the middle ear, certainly 5 to 6 *cm* backward and above. Its development was probably at or soon after the beginning of the middle-ear inflammation, as we can conclude from the occurrence of violent headache at the very commencement. It seems to me more probable that the lymph channels offered the means of transit to the subdural space for the septic matter, and occasioned an acute so-called primary abscess. I am inclined to the view that abscesses developing far removed from the place of the primary trouble are to be observed principally in acute cases of suppuration. This can be understood when we consider that in acute suppurations not only the mucous membrane of the middle ear becomes more or less markedly succulent and hyperæmic, but, according to the degree of inflammation, the entire neighboring tissue takes on the same condition for a distance often far removed from the middle ear. The vessels, above all the perivascular lymph spaces, appear therefore especially fitted for taking up and transporting septic matter to the subdural space and deeper parts of the brain. If notwithstanding this, we observe but seldom the formation of abscesses far from the ear in acute suppurations, this is but a further proof of what has been said regarding the ordinary course in the formation of a cerebral abscess.

If, on the other hand, we investigate the condition of the tissues in *chronic* suppurations, we find the inflammatory reaction, swelling and hyperæmia of the mucous membrane and surrounding parts, less marked ; in many, especially in uncomplicated cases, more limited to the mucous membrane itself. As the disease progresses we have erosion of the mucous membrane, the purulent process attacks the bone, carious destruction takes place, and finally we have complete perforation of the same. Before the carious perforation is complete a reactive inflammation in the overlying dura develops, we have a cellular infiltration, a connective-tissue thickening of the same, and its more or less pronounced adherence to the petrous bone. The dura thus forms a sort of check against the further extension of the suppuration and protects the underlying brain. If drainage is unfavorable, which, as is known, is especially apt to occur in suppurations in the attic, we get a purulent destruction of the dura at some point and the formation of a fistula in the same. The suppuration then attacks the brain substance; this softens, and we finally have what I call a typical brain abscess—that is, one which is in direct connection through a fistula in the dura with the original purulent focus. As variations of this form are to be considered cases where there is no fistula and the abscess lies close to the bone, the dura being thickened, discolored, and maybe adherent, or where there is only a thin layer of discolored and softened brain substance between the abscess and bone. On the other hand, I designate those abscesses atypical which develop far from the petrous bone and are separated from the latter by a layer of unaltered brain substance.

We have yet to consider, for the sake of completeness, the relation of traumatic abscesses to the primary purulent focus. For this purpose I have examined the statistical work of Bluhm who has compiled reports of 46 cases of traumatic brain abscess, 22 of which were saved by operative interference. His statistics show the remarkable fact that with 18 abscesses there was a direct communication with the original purulent focus, and that 14 times the dura was discolored or adherent and the abscess lay directly beneath it. In 10 cases no specification is made, and in 4 cases only is it expressly stated that the abscess was separated from the primary focus by a layer of healthy brain substance. These statistics show, therefore, that in the great majority of cases of traumatic abscess, the abscess is situated close to the part affected by the trauma. Indeed, I cannot understand why otitic should differ from traumatic abscesses, as the precedent conditions necessary for the formation of an abscess in the internal or external portions of the brain are the same, with the single difference that in the traumatic abscesses a wound, and in otitic abscesses a middle-ear inflammation, gives occasion to the suppuration in bone and brain.

According to the above, and especially to the revelation of post-mortem examinations, no doubt can longer remain but that the great majority of otitic cerebral abscesses are situated close to the petrous bone, in part indeed in immediate connection with the same. As a consequence the present and former surgical therapy must be essentially altered. It is evident that those methods now practised, in which the place for trephining is chosen far from the outer meatus, either perpendicularly above or to the front or rear of same, must be supplanted by those in which the trephine is kept close to the petrous bone, as this will give a sure guaranty of striking the abscess. Körner recommended in the above mentioned work that the upper wall of the meatus be chiselled away into the drum cavity, the tegmen tympani and any other diseased bone removed, and the abscess incised from the meatus and tympanic cavity. Schede is the only one of all operators who, as far as I know, has operated by chiselling open the mastoid and then trephining directly into the skull, opening up the roof of the mastoid, and incising the abscess from below. In his first case the operation was facilitated after opening the mastoid by the discovery of a fistula leading into the abscess. In the second case, without a more accurate clue as to the situation of the abscess, he cut in at the same place. A cure resulted in both cases. Von Truckenbrod, who described both cases, considered the favorable drainage an especial advantage of the method. I should like to recommend the following method.

If symptoms of a brain abscess arise in the course of an otorrhœa, we should, as Schwartze has pointed out, open up the mastoid before proceeding to trephine. In this way, in many cases, see those of Schede and Schwartze, we may come upon the abscess at once. It is also possible that the brain symptoms may disappear after a simple chiselling open of the mastoid, performed always according to the method of Stacke. If the mastoid has been opened and the brain symptoms continue unaltered, I advise trephining, the opening to have the size of a three-mark piece at least. The centre of the opening is to be perpendicularly over the bony meatus, so that its lower border cuts directly through the roof of the meatus. The meatus is then chiselled off to a depth of 1½ *cm*, as is also the roof of the mastoid, and the dura, with the brain substance beneath, raised up in order to expose the tegmen tympani et antri, the two places where, according to experience, the carious rupture oftenest takes place. We can easily determine whether these two bony coverings show carious spots, and whether the dura is fistulous, adherent, or discolored. An extradural abscess, if found, can also be easily opened up by this method. I have found from measurements that the roof of the tegmen tympani is from 2 to 2½ *cm* from the inner table of the squamous portion; it also lies directly on a line projected perpendicularly inward through the external meatus. On this line also lies the posterior shank of the internal capsule, if we think of it as being raised a little.

If we find the dura fistulous or adherent, the operation is simplified; we have to widen the fistula and thoroughly expose the abscess for the purpose of giving good drainage. We must remember, however, the limits within which the knife has to be confined. If one to two *cm* above the petrous bone, we should never sink the knife deeper than 3 *cm*, otherwise we run the danger of wounding the inferior horn. It is self-evident that we must not neglect to remove as far as possible any diseased bone that may be found.

If we find no fistula, and also no other indications from which we can conclude that the abscess is close to the petrous bone, we are first to seek the abscess here, and then to incise other parts of the brain. Von Bergmann has recommended that we substitute for an exploring needle the knife when sticking into the brain substance. I should recommend that this method be given preference only with limitations. If we can determine without doubt where the abscess lies, which is the case with fistula formation or with adherent dura, we immediately make a broad cut into the same; on the other hand, if we do not find these changes, and have to guess at the situation of the abscess, I see no reason why we should not first make punctures with the needle. It may require many punctures before the abscess is struck, and although a cut into the brain with the knife does not in and of itself cause any great danger, still the exploring needle will not wound the brain as much as the knife. It is well, however, always to use a needle with large calibre, as the contents of the abscess can be quite thick and crumbling. I also consider it proper to leave the dura in situ when using the needle, and to cut the dura only when the abscess has been found. We can in this way easier avoid a prolapse of the brain substance.

I should like to see the above method applied to those cases in which the symptoms point to an abscess high up in the temporal lobe—that is, where we have pronounced amnesic aphasic disturbances. If in these cases we do not find the abscess near the petrous bone, the trephine opening is to be widened backward and upward and an attempt made to puncture the first temporal convolution, situated from 3 to 4 *cm* above the meatus.

If the abscess is not found near the petrous bone, and if all signs which locate it more exactly in the temporal lobe fail, and if the symptoms still point to a cerebral abscess which we cannot place in the cerebellum, I would not hesitate to puncture with the needle in ten to fifteen places at least. In these cases we must proceed according to the method of Bramann and form a skin-periosteal flap with which we can afterward cover up the trephine hole. By this means we do not have to fear the much-dreaded cerebral œdema after laying bare a large portion of the brain.

The danger of the operation is not so very great, while an unopened brain abscess is always fatal. I therefore do not believe in putting off the operation till focal symptoms occur which render the diagnosis certain, but operate if the brain symptoms do not subside after chiselling open the mastoid. Above all, we should not procrastinate when there are symptoms of increased intracranial pressure, intense, unbearable headache limited to affected side, choked disc, and steady loss of flesh with otherwise intact organs. Early operation is the more proper, because, in the first place, trephining is not so momentous as has been pictured, and, secondly, a cerebral abscess can suddenly cause death without having shown any characteristic premonitory or focal symptoms. The operation will then in many cases come too late.

I shall not go into the after-treatment of cases of cerebral abscess. I prefer to stuff the abscess cavity with iodoform gauze rather than introduce a hard drainage tube. Above all, and this cannot be too strongly emphasized, we must seek to definitely cure the suppuration in the middle ear.

We now turn our attention to the cerebellum.

If we consider the relation of the cerebellum to the pyramid and to the mastoid, we find that it lies for a considerable extent immediately upon these, and all suppurative processes which take place in the posterior part of the petrous portion and mastoid will endanger the cerebellum. Experience teaches us that suppurations in the mastoid very readily break through the bone at the sulcus sigmoideus or in its immediate neighborhood. We get then a purulent pachymeningitis externa, which we often find developed on the dura covering the transverse sinus, and, as a subsequent condition, a deep abscess with or without thrombosis of the sinus. Unfortunately cerebellar abscesses present characteristic signs, from which a diagnosis can be safely made, to a still less degree than cerebral abscesses.

Schwartze has stated that pain especially in the occipital region is characteristic, but this is hardly true. Neither is absence of bone-conduction on the affected side (McBride and Miller) of diagnostic value.

It is generally accepted that co-ordination disturbances, staggering gait, falling toward diseased side, etc., justify a diagnosis of cerebellar abscess.

Now these co-ordination disturbances have almost never been observed ; only in the one case by Schwartze were they present to a pathognomonic extent. They are no sure proof of the presence of a cerebellar abscess, since they can occur in other cerebral diseases, especially in those which affect the corpora quadrigemina. We cannot wonder that co-ordination disturbances occur so seldom in these cases, since, according to Luciani, each portion of the cerebellum has the same function as the whole, destruction of one portion being compensated for by other portions. As these abscesses ordinarily grow slowly we can easily understand the lack of characteristic symptoms. Both the facial and acoustic nerves might be attacked by a cerebellar abscess situated quite near the porus acusticus internus ; but an affection of neither would be pathognomonic, as a facial paralysis might be due to erosion within the bone, and an otorrhœa causes hearing disturbances in and of itself.[1]

If the abscess lies more backward and inward there is danger to the pons, medulla, and to the last ten cerebral nerves. If situated in the anterior upper and middle part of the cerebellum the corpora quadrigemina are in danger, lesions of which give rise to co-ordination disturbances, visual anomalies, non-reaction of pupils, and blindness. Since these appearances have almost never been observed, we can believe that abscesses ordinarily do not extend to these dangerous zones.

Clinicians have long known that tumors, abscesses, and other pathological products that take up intracranial space, lead oftener to bilateral choked disc when in the cerebellum, than the same conditions in other parts of the brain. The presence of bilateral choked disc can therefore be taken as an indication of cerebellar abscess.

Bramann explains this remarkable fact as follows: "By pressure of the tumor or abscess in the cerebellum upon the transverse sinus, which empties into the superior petrosal sinus, and upon the superior and inferior petrosal sinuses, both of which get their blood from the cavernous sinus, we have a stasis in the latter sinus and a damming back of blood into the ophthalmic veins, the necessary consequence of which is a bilateral choked disc."

Abscess in the temporal lobe leads, according to von Bramann, much less frequently to choked disc. To bring this about the abscess must be situated far inwards and press directly upon the cavernous sinus or upon the superior petrosal sinus. If an abscess situated far forward in the temporal lobe presses upon the ophthalmic vein, we get a unilateral choked disc. In this latter case, on account of the proximity of the optic nerve, disturbances in sight will seldom be absent.

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[1] We must remember, however, that lesion of the facial peripheral to the ganglion geniculi does not generally cause a paralysis of the velum palati. The palate receives innervation through the superficial petrosal nerve which connects the ganglion geniculi with the ganglion spheno-palatinum. In suspicious cases, if we observe a simultaneous paralysis of face and palate, the diagnosis of cerebellar abscess is to be earnestly considered.

From the above we see how difficult it is to diagnose a cerebellar abscess, and that its localization is out of the question.

As to trephining for a cerebellar abscess, von Bergmann advises that the middle of the opening be placed on the posterior boundary line of the field given by him for the trephine opening in cases of temporal lobe abscess. He forms a moderately large skin-periosteal flap, whose convexity reaches down to the outer surface of the pars mastoidea. In this way is laid bare the infero-posterior angle of the parietal bone and its articulation with the temporal and occipital bones, and also the emissarium mastoideum.

Chauvel advises the opening to be made on a level with the upper edge of the auricle and a finger's breadth posterior to the position given by him for abscess in the temporal lobe.

We have several guides for laying bare the cerebellum. As I found from the examination of 60 skulls, the point of union of the three sutures (sutura lambdoidea, parieto-mastoidea, and occipito-mastoidea) corresponds to the highest point of the sulcus sigmoideus. From here the sulcus transversus, with its sinus, arches slightly upward and backward, or runs quite horizontally or slightly upward to the protuberantia occipitalis interna. If we prolong the short horizontal portion of the sutura parieto-mastoidea backward, this line will about correspond to the course of the transverse sinus; perhaps the latter is, in many cases, situated a little lower.

We can determine the course of the transverse sinus still easier by drawing a line backward from the roof of the orbit, ½ *cm* above the bony meatus. This line forms the upper boundary of the operative field.

We expect to find here, as in the case of the temporal lobe, that the abscess is situated near the temporal bone, and we have to proceed accordingly.

If we suspect a cerebellar abscess and the mastoid has not been opened up, we have that to do first, and, if necessary, subsequently to trephine. If, on the other hand, the chiselling open has been done and the cerebral symptoms continue, I advise the following: A cut is to be made from 4 to 5 *cm* long from the middle of the auricle horizontally backward, and from the ends of this two perpendicular incisions upward, and at the anterior extremity a cut is to be made downwards to the tip of the mastoid. The skin-periosteal flaps thus formed are to be loosened up till the emissarium mastoideum becomes visible. The situation of the latter varies considerably, generally it is from 2 to 3 *cm* below the sutura parieto-mastoidea, either in the sutura occipito-mastoidea itself, or somewhat in front of the same.

When we have the operative field laid bare and the bleeding stopped, we have to chisel away the mastoid completely, until the posterior cerebral fossa is opened and the transverse sinus laid bare. I lay especial value on the free opening up of the sinus, as in cerebellar abscesses we find it often diseased, not seldom, perhaps, being the cause of the abscess. We have at the sigmoid sulcus the place where perforation takes place most readily in mastoid suppuration, and it is possible to quickly find the brain abscess from the fact of its being in immediate connection with, or disconnected but slightly from the perforation in the bone. As soon as the opening into the posterior cerebral fossa is great enough, I advise using Lüer's forceps, instead of the chisel. There is scarcely any danger of wounding the sinus, and the bone can be slowly chipped off until the opening has the desired size. The size should be at least that of a two-mark piece, and is to be placed so that its upper edge does not come above the sutura parieto-mastoidea. The trephine opening therefore sacrifices a large part of the sigmoid sulcus. When the opening is sufficiently large, the dura and overlying brain is to be raised upward and backward in order to render visible the sulcus sigmoideus up to the jugular fossa, and likewise the posterior surface of the petrous pyramid up to the porus acusticus internus. The internal meatus can, as we know from experience (see cases of Jansen and Rothholz), connect a middle-ear suppuration with a brain abscess. If there is no fistula and the dura is not adherent to the petrous bone, the aspiration needle is to be introduced in the neighborhood of the petrous bone in different directions to a depth of 3 *cm*. Only when pus is found are we to incise with the knife and to treat the abscess according to general surgical rules.

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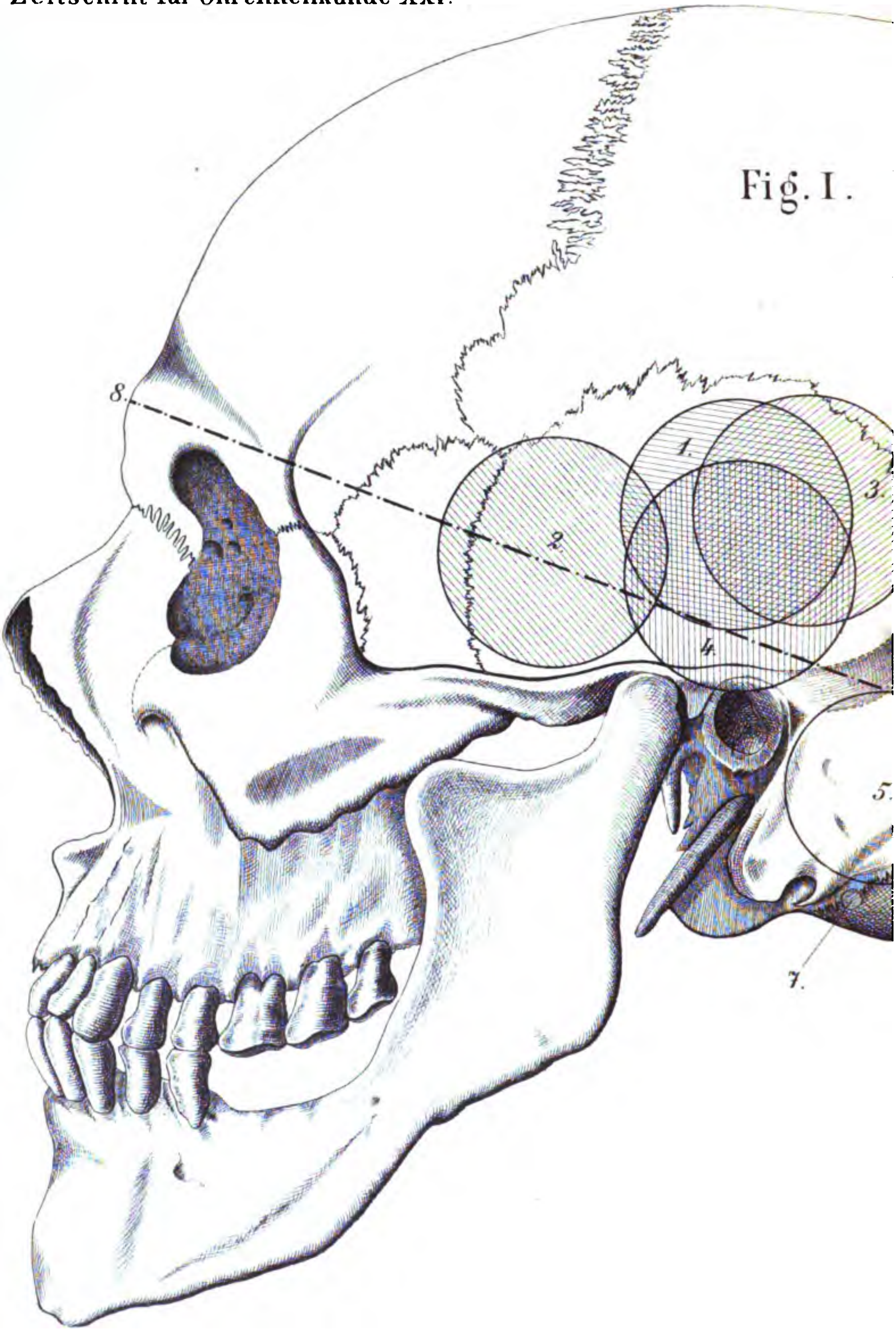
Fig. I.



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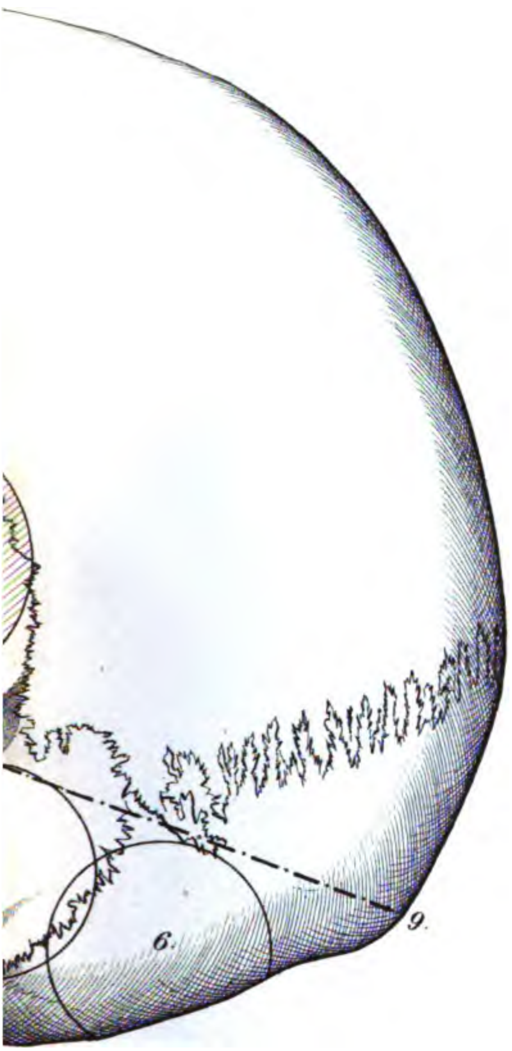

Fig. II.

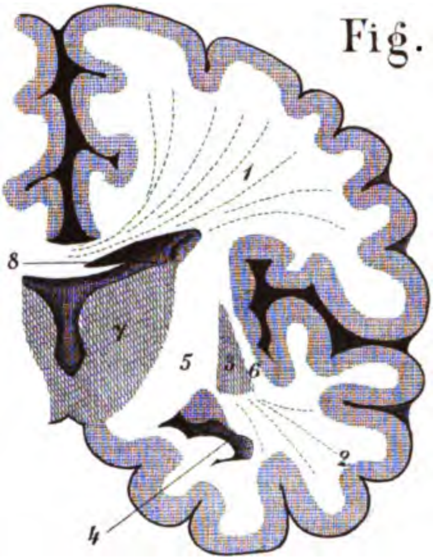

Fig. III.

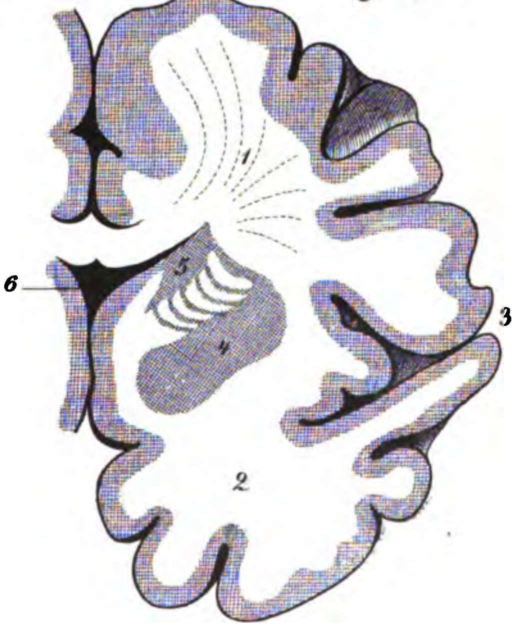

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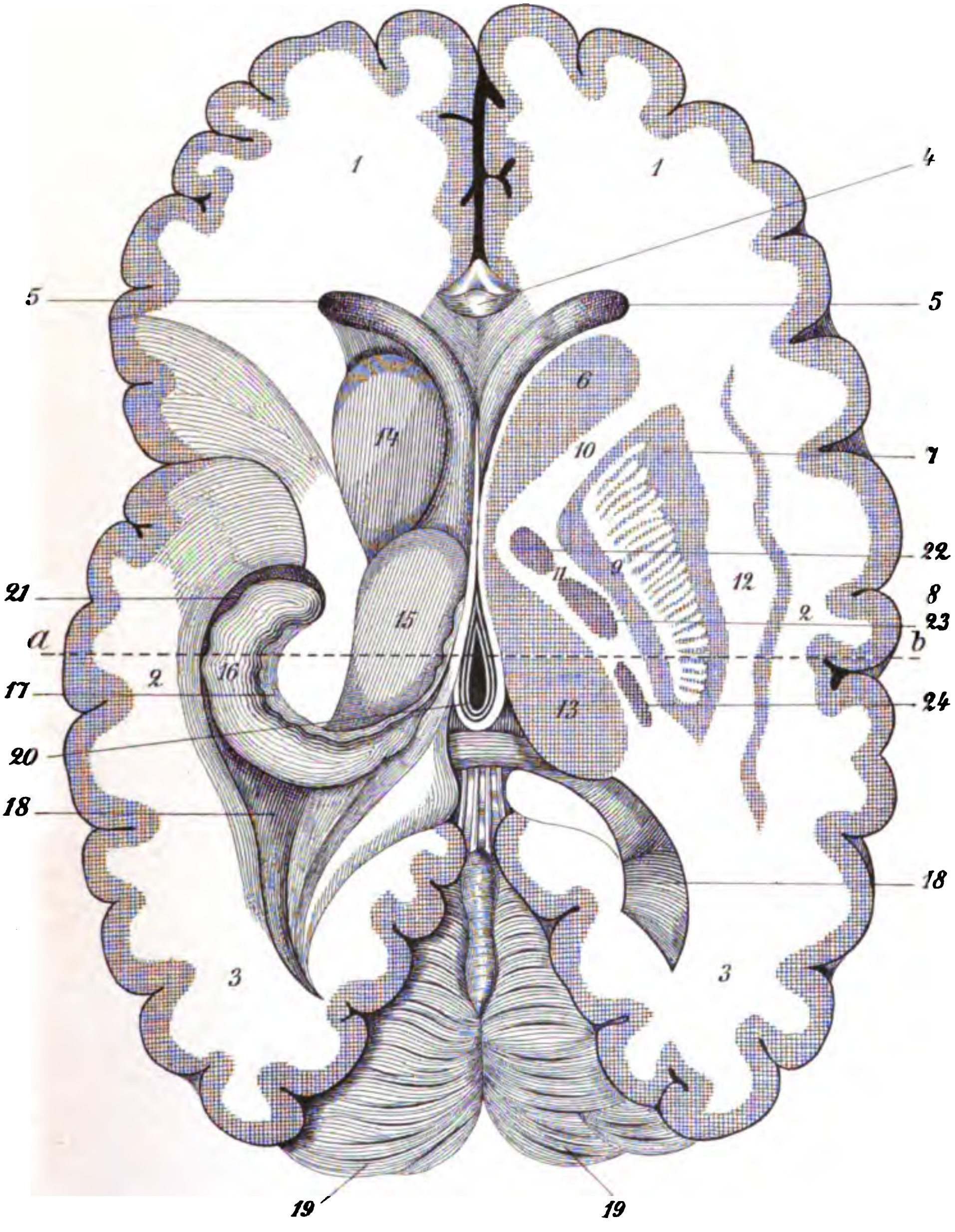
Fig. IV.



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Explanation of the Plates.

FIGURE I.

1. Trephine opening according to Chauvel.
2. Trephine opening according to Greenfield.
3. Trephine opening according to von Bergmann.
4. Trephine opening with removal of roof of meatus and mastoid.
5. Trephine opening with removal of posterior portion of mastoid.
6. Trephine opening according to Schwartze.
7. Foramen mastoideum.

8, 9. Upper boundary line in operating on cerebellar abscesses.

FIGURE II.

The section runs somewhat obliquely downward and forward.

1. Parietal lobe.
2. Temporal lobe.
3. Lenticular nucleus.
4. Inferior cornu.
5. Internal capsule.
6. External capsule.
7. Thalamus opticus.
8. Lateral ventricle.

FIGURE III.

Section just in front of thalamus opticus.

1. Frontal lobe.
2. Temporal lobe.
3. Fossa Sylvii.
4. Lenticular nucleus.
5. Caudate nucleus.
6. Lateral ventricle.

FIGURE IV.

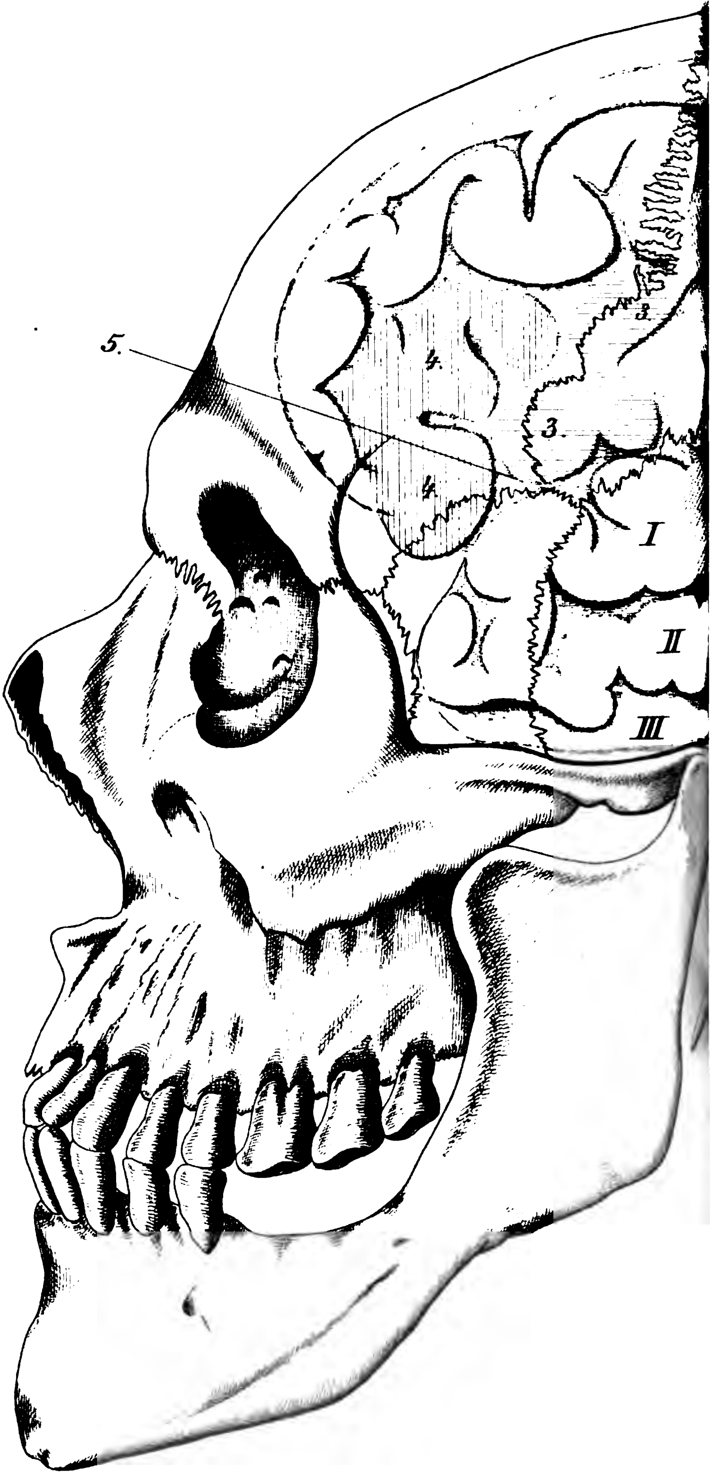
Horizontal section through cerebrum. On left side the lateral ventricle is laid open from above so that the anterior, inferior, and posterior horns are visible throughout. It can be seen that the inferior and also the posterior horn lies near the outer surface of the brain. On the right side the upper part of the corpus striatum and the couches of optic nerve have been removed by a horizontal section running somewhat obliquely downwards and outwards. The caudate nucleus and the lenticular nucleus and also the internal capsule are thus rendered visible.

1. Frontal lobe.
2. Temporal lobe.
3. Occipital lobe.
4. Corpus callosum.
5, 5. Anterior horn.
6. Nucleus caudatus.
7, 9. Nucleus lentiformis.
8. Claustrum.
10. Anterior shank of internal capsule.
11. Posterior shank of internal capsule.
12. Capsula externa.
13, 15. Thalamus opticus.
14. Corpus striatum.
16. Ammonshorn.
17. Fimbria.
18, 18. Posterior horn.
19. Cerebellum.
20. Third ventricle.
21. Inferior horn.
22. Facial tract.
23. Motor tract.
24. Sensory and psycho-sensory tracts.
a, *b*. Line projected from the outer meatus through the tegmen tympani and the posterior shank of the internal capsule.

FIGURE V.

Lateral view of cerebrum and cerebellum in situ, dura and bone removed down to the roof of the meatus.

1, 1. Centre for the lower extremity.
2, 2. Centre for the upper extremity.
3, 3. Centre for facial and hypoglossal.
4, 4. Motor speech centre.
5. Island.
6, 6, 6. Amnesic speech centre.
7. Cerebellum.
I. First temporal convolution.
II. Second temporal convolution.
III. Third temporal convolution.



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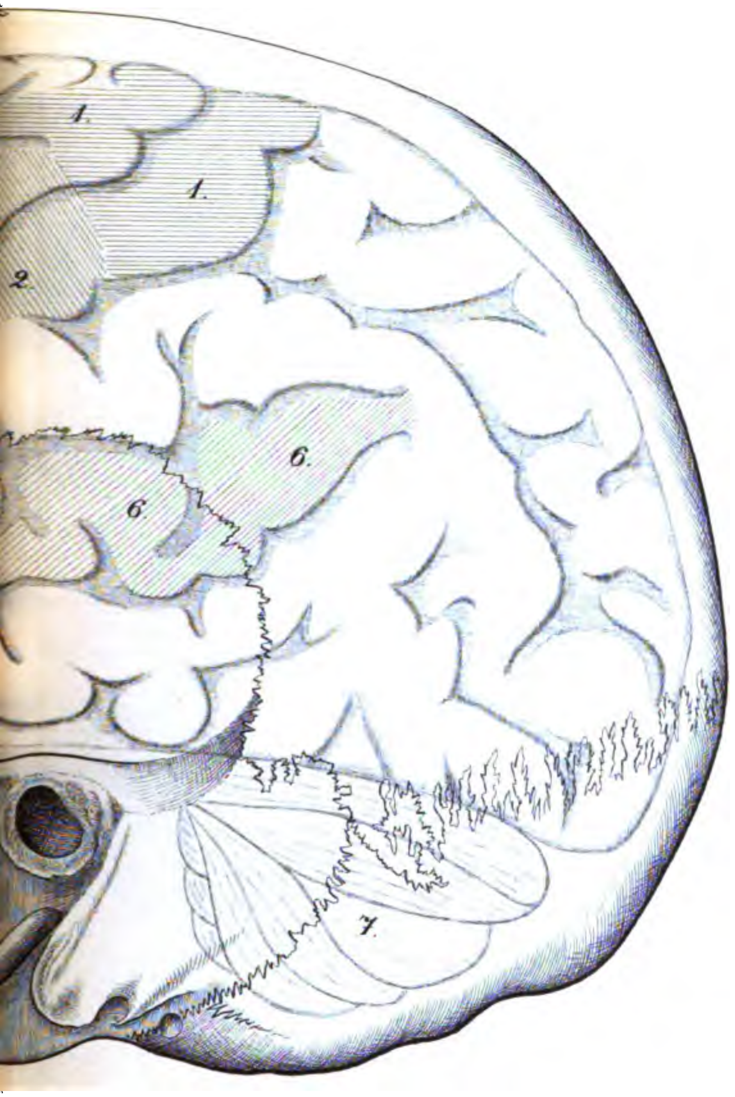

Fig. V.

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TWO CASES OF OTITIC BRAIN DISEASE—SINUS THROMBOSIS, AND ABSCESS.

BY DR. ROBT. E. MOSS, SAN ANTONIO, TEXAS.

I—*Suppurative mastoiditis complicated with sinus thrombosis—Operation—Recovery.*

Mrs. L. E., æt., twenty-seven, had measles six weeks before I saw her, and suppuration of middle ear as a complication during latter part of attack. The mastoid became involved later and the pus found its exit at lower tip of process and burrowed beneath both deep and superficial fascia causing diffuse cellulitis of the neck from mastoid to clavicle. Patient was referred to me by Dr. Frank Paschal, Aug. 14, 1894, he having seen her for the first time that day. The neck was greatly swollen on right side, fluctuating by palpation, and causing great pain all the time. The discharge from external ear very slight, the posterior superior wall so swollen that inspection of *Mt* was impossible. Hearing for watch reduced to pressure. I advised immediate operation, which was done the following day. Her temperature at time of operation was 101° F. Opened mastoid with chisel and curetted thoroughly, removing a great deal of granulation-tissue and carious bone. The hemorrhage was so profuse I had to pack with gauze. The tissues of the neck were freely opened, irrigated with hot carbolized water, and a gauze drain put in from tip of mastoid to most dependant point of pus accumulation.

Aug. 16th. Temp. 100° F., pulse 92, patient comfortable. Took off dressings, irrigated with boiled water carbolized, dried cavity, insufflated iodoform freely, packed lightly with gauze, and applied bandage.

Aug. 17th.—Temp. 99°, pulse 80.

Aug. 18th.—Temp. normal, discharge slight, appetite fairly good.

Aug. 20th.—Came to my office, no fever, wound doing nicely.

Aug. 21st. Temp. 101°, pulse 110. Complains of headache and chilly sensations, wound doing nicely.

Aug. 22d.—Temp. 103°, pulse 130. Complains bitterly of head and ear. The internal jugular vein showed marked phlebitis. Dr. Paschal saw her with me and concurred in the view that a second operation was necessary; as we evidently had a sinus thrombosis to deal with. She was sent to City Hospital and we expected to operate next day, but owing to some misunderstanding we were not permitted to do so.

I saw her again Aug. 25th, temp. 100°, pulse 90, fairly comfortable, and her condition continued about the same for ten days when she had a decided chill. Temp. 102.8°, pulse 130, great pain over lower lobe of right lung, suppressed cough, and marked crepitation on auscultation. The condition showed plainly we had a septic infarction of right lung.

Sept. 5th.—Temp. 99.5°, pulse 100.

Sept. 6th.—Temp, 101, pulse 120°. She was chloroformed, and, assisted by Drs. Paschal, Kingsley, and Fitzsimons, I exposed sigmoid sinus for one and a half inches and found it firmly thrombosed. I slit it open freely and pushed a piece of gauze into it in each direction and loosely packed the part that had been opened. The cavity was dusted with iodoform and loosely packed with gauze. I then cut down upon the internal jugular vein and put on two ligatures, cutting the vein between them. I had great difficulty in exposing the vein due to the cellulitis. Patient stood the operation nicely and had no unfavorable symptom except a second infarction in right upper lobe, anterior aspect, which caused slight elevation of temperature for three or four days. She left the hospital at the end of two weeks and came to my office to have wounds dressed.

Oct. 22d.—Wound nearly closed, no discharge at all; perforation in *Mt* healed, hearing W. $\frac{36}{40}$ She is very anæmic, spleen enlarged, slight anasarca and some ascitic fluid in abdomen.

Nov. 13th.—Wound entirely healed, patient able to do her own housework, and her general condition greatly improved.

In looking over the latest works at my command I find one case only recorded by Burnett, operated on by Keen, and two cases in Macewen's work.

II.—*Mastoid sclerosis, cerebral abscess—Operation—Death.*

Mrs. W., æt. fifty-one, came with history of acute attack of mastoiditis in October, 1893, followed by profuse discharge from external canal. She had recurring attacks at intervals of one to three months with constant deep-seated pain over mastoid and occiput. I saw her first Aug. 15, 1894. She was complaining very much of pain in ear and over occiput: she could not put back of head on pillow, nor had she been able to do so for several months on account of the pain.

The *Mt* was opaque, slightly bulging in superior posterior quadrant. Hearing W. $\frac{4}{40}$. No swelling over mastoid, but she complained of great pain when percussed with finger. Eye-ground normal except hazy outline of both discs, vision with $+.75 = \frac{15}{30}$; complains of photophobia at times. I advised mastoid operation and for immediate relief did a paracentesis and gently inflated by Politzer's method. A slight amount of fluid escaped, serous in character. I ordered a laxative, moist heat to ear and mastoid, and agreed to operate the following day; but received message saying she felt perfectly well and declined to have operation performed. She came again August 24th begging for relief. There was no perceptible change in either the ear or appearance of eyes.

Aug. 25th.—I did the mastoid operation, opening the antrum and found a few drops of fluid, some caseous material, and very marked sclerosis. Operation performed in the most strict aseptic manner.

Aug. 26th.—Temp. 98.6°, pulse 90; had restless night, slight nausea, complains of pain in ear, but says she is free from pain in back of head and can sleep on back for first time in five or six months.

Aug. 27th.—Temp. 99.5°, pulse 100; headache and pain in ears, slight discharge from external canal.

Aug. 28th.—Temp. 98°, pulse 96; tongue coated, bowels constipated; urine scant, highly acid, sp. gr. 1026, no albumen; discharge from ear and mastoid rather profuse, pain very great, refuses food.

Aug. 29th.—Temp. 98°, pulse 90; condition about same, except both discs completely blurred in outline. Her condition varied but little, the temperature remaining from a half to one degree subnormal, pulse 90° until Sept. 12th. The pain became so great I was compelled to give large doses of morphine to keep her reasonably quiet. Pupils dilated, photophobia, papillitis quite marked, retinal vessels tortuous.

Sept. 13th.—Temp. 97.6°, pulse 86; had a bad night. External canal closed, slight swelling of face and lids, pupils widely dilated, photophobia very great, diffuse retinal hemorrhages in both eyes, more marked in left. Advised another operation, but it was refused.

Sept. 14th.—Temp. 97.8°, pulse 92; vomited during night several times; refuses nourishment, instructed it to be given by rectum.

Sept. 15th.—Temp. 98°, pulse 90; restless, sighing and weeping, begs for relief and consents to operation. Assisted by Drs. Paschal and Hugh Young, I exposed sigmoid and lateral sinuses and removed the bone upward for inch and a half. There was nothing abnormal with either sinus, nor the dura. I explored each sinus and brain with hypodermic needle with negative result, then slit the dura and explored brain over middle fossa with a grooved director, but failed to get any pus. I felt positive, however, that the director had entered a cavity, yet no pus escaped. I introduced a piece of gauze into brain substance a half inch, left wound open, loosely packed with gauze, and put on bandage.

Sept. 16th.—Temp. 98.6°, pulse 96; slept six hours during night without any drug, slight nausea, but is able to take peptonized milk and freshly squeezed beef-juice.

Sept. 17th.—Temp. 98.6°, pulse 86; vomited during the night, rather restless, complains of ear, pupils dilated, but react to light. Removed dressings, wound perfectly dry.

Sept. 18th.—Temp. 98.6°, pulse 86; pupils normal; had a good night, begging for solid food; *dressing saturated with discharge*, also some cloths used to protect gown and pillow. Removed dressings and found pus escaping alongside of gauze that had been pushed into brain. I introduced a flexible bulbous-tipped probe and found the cavity at the depth of one and a half inches. The opening was enlarged and strip of gauze pushed into the cavity.

Sept. 19th, 20th, 21st.—Condition about the same, pupils normal, discharge very slight, clamorous for food, complains of pain in front of ear.

Sept. 22d, 23d, and *24th.*—Temp. normal, pulse 90; pain in front of ear still, and complains at times of vertigo, which is very distressing.

Sept. 25th.—Temp. 98.4°, pulse 86 ; no discharge, external canal closed, pupils dilated.

Sept. 26th.—Temp. 97.8°, pulse 90 ; pupils widely dilated, no discharge, severe headache : 3 P.M.: temp. 98.6°, pulse 92 ; pupils slightly dilated, wound discharging freely. Her condition continued about the same until Oct. 1st ; found temp. 100.5°, pulse 96 ; pupils slightly dilated ; 1.30 P.M. ; temp. 101.8°, pulse 96 ; has great difficulty in saying what she wishes to on account of not being able to use the word she wants ; after it is suggested she will then finish the sentence. There was very little change to Oct. 9th, except slight increase of fever at times.

Oct. 9th, 7.30 A.M.—Temp. 98.6°, pulse 86 ; no discharge, pupils normal, slept eight hours during night ; 7.30 P.M. : temp. 103°, pulse 112 ; restless, muttering delirium. After this her fever ran from 103° to 106°, and she died Oct. 13th. No post-mortem allowed.

The death may have been caused by the consequences of the original abscess (septic meningitis) or by a second abscess.

VERTICILLIUM GRAPHII AS THE CAUSE OF AN OBSTINATE OTITIS EXTERNA DIFFUSA.

By MAXIMILIAN HERZOG, M.D., Chicago,

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IN looking over the literature of the subject, I fail to find any cases of otitis externa diffusa parasitica caused by verticillium graphii (Harz-Bezold) reported from anywhere in the United States, though the mycosis of diffuse external otitis has been studied by several observers in our country. A number of cases of this kind are reported by Siebenmann (ARCHIVES OF OTOLOGY, vol. xviii., p. 257), who gives an account of fifty-three cases of otitis externa diffusa observed and examined as to their ætiology by Bezold. Among Bezold's fifty-three cases of otomycosis the micro-organisms found were classified as to their genus thirty-six times; among this number verticillium graphii was found seven times. Siebenmann, in the article referred to, gives the following description of this micro-organism:

" . . with a large percentage we further find in our statistical synopsis a verticillium recorded. Profs. Harz and Bezold thus call a mould which—not identical with any botanically known mould—was first described by Hassenstein and Hallier, and a year later by Steudner, and which was also found three times in the ear by Prof. Bezold as early as 1870–79. Prof. Hassenstein (*Archiv f. Ohrenhk.*, vol. iv., p. 162) gives an extensive history of a case . . . Hyphens of thallus transparent, colorless, later thick-walled, yellow to brown, septate, branched, diameter 2–3 μ. The fruitbearers somewhat lighter, at large distance delicately septate, straighter and somewhat thinner than the mycelium. Branches in pairs, opposed to one another, frequently given off irregularly, often branched again. Spores isolated at the end of the branches, tapering towards the fruitbearers, when ripe smoke-gray, ovoid with smooth surface (diameters 5 and 3 μ), bundle-shaped mycelium-cords, and stem-formation with normal formation of conidia very frequent."

This description answers in almost every detail to the mould I obtained in pure culture from a very obstinate case of otitis externa diffusa which came under my observation. Clinically the case presented the following features:

Mrs. C. S., twenty-seven; born in Germany; came to the United States in 1883, presented herself for treatment October 4, 1893. Stated that she had, for the last five or six years, been frequently the subject of attacks of earache on both sides; that her mother in Germany had likewise suffered frequently from the same trouble.

Examination: The integument of the meatus auditorius externus on either side is very much swollen and reddened so that only a small part of the membranæ tympani can be inspected. The membranes, as far as seen, do not present any appreciable pathological changes; hearing distance for whispering voice six or seven metres on either side; tuning-fork tests normal. The ears were first syringed with hot sterile water, and the meatus were wiped with sterile cotton, which was dropped into test tubes containing sterile bouillon.

This bouillon, when examined twenty-four hours later, contained mould mycelia. From the culture fluid peptone-gelatine plates were made. These plates, at a temperature of 20–25° C. developed mould colonies of circular outlines, raised considerably over the surrounding surface of the culture-medium, of a grayish-white color with a slight tinge of yellow. These colonies consisted of mycelium only, no fruitbearers with spores being found. The growth was next transferred to potatoes, where it evidently found a more fertile soil for development, which found its expression in the formation of fruitbearers with spores. The mould obtained answered, as above stated, to the description given of Bezold's verticillium graphii. I may add a few observations upon this micro-organism.

Evidently verticillium graphii does not find a very favorable soil on peptone-gelatine (even if this be acid in reaction). Repeatedly I could not get any cultures at all on gelatines from reasons not known to me. Never did I obtain a fruit formation on gelatine, and the mycelium formed differs from that found on a potato culture by being thinner and more transparent in its individual stems or branches. It also does not show very markedly that tinge of yellowish-brown which is found in the older hyphens on potato cultures. On the latter soil the verticillium grows more rapidly than on gelatine, and the colonies attain a larger size and are much more elevated over the surface of the culture medium. The spores are, as stated by Siebenmann, pear-shaped; they seem to be attached very loosely to the fruitbearers, because in all of my specimens examined under the microscope by far the majority of the spores had fallen off from their fruitbearer. The pear shape is often very distinct in that the spores show on one pole of the long diameter a nipple-like process; sometimes both poles show such a process. It seems that spores may divide and form two spores, as I have seen pictures under the microscope which indicate this occurrence. However, it is also possible that in these instances I only dealt with two spores which came in opposition with their nipple-like processes. As a rule the growth occurs in the following two manners:

By Fission.—The spore begins to elongate and grows in the direction of its long diameter, until the latter has attained twice or thrice the size of the short diameter. Then the granular protoplasmic contents of the elongated spore divides in the middle of the cell, and the two separated masses diverge towards the poles of the long axis, leaving a clear space in the middle. Here the cell membrane bulges somewhat outwardly, forming a ring *en relief*, as it were. Next we see a constriction which gets more and more marked, until the cell is finally completely divided in two now more or less cylindrical cells.

By Budding.—We also see that spores grow by the process of budding. After some elongation and flattening of the poles, we see on one of the latter the formation of a small nipple. It seems that the protoplasmic contents of the cell first issues a process which stimulates the cell membrane to advance in its growth in the direction prescribed by the protoplasm. This nipple elongates and gets larger in its diameter, until it reaches the size of the mother cell. The following drawings may illustrate the processes of growth as described.

The picture of the micro-organism as a whole, as seen under the microscope by the author, is almost identical with the picture given by Siebenmann in his article referred to (this picture is reproduced in the *System of Diseases of the Ear, Nose, and Throat*, Philadelphia, 1893, vol. i., p. 198). The only feature in this drawing which seems objectionable to me is the stem formation marked (*a*), which might easily convey to the observer the idea that the fruitbearers arise from the stem in a "racemose" or "umbelliferous" manner; this is never the case. The stems are always divided in an irregular, dichotomous manner, and so are the fruitbearers, which never carry more than one spore. A picture like that seen in fructifying penicillium is never seen in verticillium graphii.

After the cause of the otitis externa had been discovered, the treatment proposed by Bezold was instituted, consisting in the instillation of a 4 per cent. solution of salicylic acid in alcohol. Under this treatment the inflammation caused by the mould very soon abated, disappearing entirely after a few weeks' persistent treatment. When seen about seven months later the patient stated that she had not had another attack of earache, and that she had, in fact, not been free from earache for so long a period for the last five or six years.

THE POSSIBILITY OF OBTAINING MARKED IMPROVEMENT IN THE TREATMENT OF DEAFNESS AND SUPPOSED DEAF-MUTISM BY ACOUSTIC GYMNASTICS—A SYSTEM OF VOCAL TRAINING OF THE AUDITORY NERVE, AS ADVOCATED BY PROFESSOR URBANTSCHITSCH OF VIENNA.

By Dr. M. A. GOLDSTEIN, Saint Louis, Mo.

THE following communication is presented to the American medical profession, with full authorization and approval of Professor Urbantschitsch, from translated extracts of his monographs and from the writer's notes and personal experiences with numerous cases under Professor Urbantschitsch's special supervision.

The proposition to attempt the treatment of deaf-mutism by the influence of *aural gymnastics* (training of the auditory nerve) is by no means new.

Beck (*Ohrenheilkunde*, 1827, page 73) notes the recommendation of Bewus in 1743 to treat deafness by sound conduction. Itard (*Traité des Malad. de l' Oreille*, 1821, Paris, t. ii., page 446) and Toynbee (*Diseases of the Ear*, 1860) report a number of cases successfully treated by similar methods. Phillippe (*Journal de Méd.*, Bordeaux, 1846, page 254) strongly advises the use of an ear-trumpet, a method at present much in vogue among French aurists.

Browne (British Medical Ass'n, Cork, 1879) and Keown (*Arch. f. Ohrenheilk.*, vol xvi., page 229) have also reported improvements in hearing, the result of aural gymnastics. Urbantschitsch (*Arch. f. Physiologie*, Pflügers, 1883, page 129) has recorded numerous improvements in auditory perception casually observed in the examination of healthy and diseased ears. Eitelberg (*Zeitschrift f. Ohrenheilk.*, 1883, vol. xii., page 258) has instituted more detailed research in similar cases.

Notwithstanding all these observations and the thoroughly instructive investigations of Itard and Toynbee, the attempt to adopt a systematic treatment influencing hearing for the totally or partially deaf has been sadly neglected, and has gained but little recognition, especially from aurists. Even the celebrated Ménière (*Gazette Méd. de Paris*, 1880, No. 50 and 51), one of the most distinguished of French aurists, seems to have added a discouraging opinion, designating the results of the application of aural gymnastics and other methods of training of deaf-mutes, undertaken by the Paris Deaf-mute Institute, as illusionary and transient.

" Several years ago," writes Professor Urbantschitsch, " I obtained by systematic aural gymnastics surprising results in the case of a deaf-mute boy presented to me for treatment ; primarily the patient was able to hear only loudly spoken vowels and single syllables ; after one year's treatment he was able to understand complete sentences, spoken in a moderately loud voice, and finally the ordinary methods of oral instruction were made possible by the steady improvement of the patient."

The past year Professor Urbantschitsch has instituted a daily class in " aural gymnastics " for the instruction of a large number of deaf-mutes, and has attained results of a most gratifying character. This group of children, who, in previous examinations, had been declared hopelessly deaf and ready for entrance to deaf-mute asylums, have, since the adoption of methodical " aural gymnastics," recovered, not only their capacity of hearing *vowels*, but, in the course of one year's practice, have been able to hear and repeat *whole sentences.* Many of these cases at the first examination gave indications of absolute deafness, demonstrable by tuning-forks of different pitch through air- and bone-conduction, and by most intense sounds applied to the ears ; even the use of ear-trumpets, tubes, and similar devices developed no sound perception.

The writer has personally seen many of these cases, and noted the marked improvement from month to month.

The surprising fact that it is possible for an individual, apparently completely deaf, to develop, by systematic training, not only *perception*, but also *differentiation* of sound, is to be considered only from the one standpoint that said individual was not really deaf, but lacked the power of properly interpreting acoustic impressions.

Such a system of methodical, accurately conducted "aural gymnastics," as herein indicated, can be of decided value to seriously affected hearing, by producing: 1st. A *differentiation* and *proper perception* of aural impressions; 2d. *A stimulation in sound intensity*, with a gradually *increasing acuteness* in aural perception.

The manner of conducting this new system is as follows:

By way of illustration a case of complete deafness or deaf-mutism is presented. In a loud voice, close to the patient's ear, a vowel is sounded; the patient receives either *no impression* or indicates a *very indefinite sound perception;* this sound perception, if present, may be the same for all vowels, thus, *a-e-i-o-u* would all be heard as *a* or *e*, as the case may be. The exercise is begun by indicating to the patient the vowels to be used, as, for example, *a* (as in *father*), *e* (as in *eel*). It is most interesting to observe, how, by several minutes' use of these two vowels, called into the ear in a steady, loud voice, the patient often arrives at a differentiation of sound; by no means a complete differentiation, yet the sounding of *a* produces a different impression than *e*. In some cases several minutes suffice to reach such a primary differentiation; in others, a number of sittings are required. Gradually, as expeditiously as each individual case indicates, the other vowels should be brought into use. The plainest, simplest sounds of the vowels should be used, viz.: *a* (as in *father*), *a* (as in *late*), *e* (as in *eel*), *o* (as in *hope*), *u* (as in *flute*). Following the vowels, the consonants should be combined in monosyllables as: *lo*, *may*, *do*, *ba*, *he*, etc. Consonants heard with difficulty and easily confusable, as: *b* and *p*, *t* and *d*, *g* and *k*, etc., should receive extra attention and be diligently practised. To add interest to these exercises for the patient, it is well to use, instead of mere sounds, words of single syllables, as: *ball, pall—to, do—gate, Kate,* etc.

Should the patient persist in repeating a wrongly heard sound or word, it is suggested to give him, first the *right* and then the *wrong* sound, until the differentiation becomes apparent to him.

A very interesting comparison is that of *perception* and *conception* of sound impressions, as ascertained in the course of this method.

A deaf-mute, who, through this system, hears a word for the first time and repeats it correctly, scarcely comprehends the meaning of the word. A case is cited of a deaf-mute girl, who, during one of these acoustic practices, was given the word *Anna*, the name of one of her sisters. This word was plainly heard and correctly repeated, yet when the meaning of the word was asked, the patient was unable to associate the idea of her sister's name with the word heard. When the explanation was given, the young girl's surprise was great, and from that moment a rapid improvement was noted, as the patient made every effort to combine the spoken word with the idea implied.

It is recommended that, in this practice, *words without meaning* should *also* be used, to determine whether or not the patient really hears the words used, and is not exercising the power of combination of familiar sounds.

As the progress of each individual case indicates, *whole sentences* should follow the use of *vowels, consonants,* and *words.* Also the *hearing distance should be gradually increased.*

As the patient becomes accustomed to the practice, the speaker's *lip-movements should no longer be observed,* in order that the results gained may be those of the "aural gymnastics" *exclusively;* without the auxiliary aid of the eye. The case of a boy is cited, who, at the beginning, could not hear a single vowel when loudly spoken in his ear at closest range; in six months' practice he could hear and repeat accurately whole sentences, with the speaker at a distance of five feet, and without the aid of the lip-reading system so much in vogue in the deaf-mute teaching institutions of Europe. Many similar cases are recorded.

Regarding the length of time of each sitting in this practice, it is important to know that a few minutes often suffice to tire such patients' hearing power completely, *too prolonged a sitting* sometimes temporarily causing a condition similar to nervous asthenopia. It is therefore recommended that a limit of time in carrying out these "aural gymnastics" be always observed. At the beginning, sittings from ten to fifteen minutes, repeated two or three times daily, suffice; gradually increase the length of each sitting to one half hour and one hour, to suit the requirements of each case. Scarcely ever should a sitting be prolonged beyond one hour.

If an *exhausted condition* of the patient's hearing power is observed, the exercises should be discontinued for a week or ten days.

The *pitch and intensity of voice* used must be modified as each case demands. The use of ear-trumpets to intensify sound should be very limited, as a sensitive aural perceptive apparatus may be easily damaged by harsh or sharp sounds. In some cases where the hearing condition is very bad, the ear-trumpet may be cautiously used in this practice with advantage. Generally, however, a long-sounded vowel or word, given in a moderately loud and clear voice, close to the ear of the patient, and in the axis of the auditory canal, with care used in articulating very distinctly, will suffice.

Of the ultimate results of the application of this system we can scarcely form a complete estimate, as the range of improvement in many instances has proven almost unlimited. Only through long experience, with persistent and patient practice, can an ultimatum be reached. The advantages, however, are self-evident, and require but a short reference. Even the benefits acquired by *vowel hearing*, in modulating and regulating speech, are all-important. The gradual progression from vowel hearing to consonants, words, and finally the comprehension of entire sentences, is only possible by a diligent application of "aural gymnastics."

Beneficial results from the use of this system are equally distributed, either in cases of *congenital or acquired deafness*. Professor Urbantschitsch reports excellent success in cases of acquired deafness, sequelæ of cerebro-spinal meningitis, typhoid fever, scarlatina, measles, traumatism, and in one case of deafness, the result of fright, the condition existing for twenty-two years.

Age seems to offer no obstacle to success. In the deaf-mute asylums of Austria these suggestions of Professor Urbantschitsch have been given every consideration, and the practical tests have yielded most gratifying results. For nearly one year these exercises have been combined with the regular system of instruction in the Oberdoebling Deaf-mute Institute of Vienna, and the progress of the pupils, as indicated by recent tabulated reports, has been remarkable.

A number of these pupils, to whom the special instruction had been given, were presented before the Society of Physicians, in Vienna, April 27th last, and the fact that these congenitally deaf pupils could hear the speaker at distances varying from several inches to ten feet, without the aid of lip-reading or signs, was in itself the most brilliant testimony of success.

Such gratifying results, reached while this system is still in its infancy, and in such comparatively short time, speak volumes. The introduction of a system, which gives promise of so beneficial an aid in training and instruction of deaf-mutes, should be granted a fair and patient trial in every deaf-mute institution and by every aural specialist in America. The Volta Bureau of Washington has, as I understand, received Professor Urbantschitsch's communications of this system, and is stimulating investigations as to its efficiency.

Every medical man in general, and aurists in particular, should give the system of instruction pursued in our various institutions for the deaf and dumb a careful study, so as to be able to recommend understandingly to the parents and friends of these unfortunate members of society the course of training to be pursued, best calculated to result in greatest advancement.

2602 Locust St.

REPORT OF THE PROCEEDINGS OF THE THIRD MEETING OF THE GERMAN OTOLOGICAL SOCIETY IN BONN, MAY 12TH AND 13TH, 1894.

Translated by Dr. W. A. Holden.

FIRST SESSION, MORNING OF MAY 12TH.

Chairman : Dr. Kessel of Jena.

Siebenmann, Basle : *On the first appearance of the auditory ossicles and the tubo-tympanic space in man.*

Examination of human embryos of the 3d to the 8th week showed that the blastem of the cartilaginous labyrinth capsule appears in the 4th week, that of the annulus stapedialis in the 5th, and that of the malleus and incus in the 6th week. Even at the earliest stage the blastem of the annulus stapedialis lies near the labyrinth capsule as well as the dorsal end of the fore-cartilage of the second pharyngeal arch. The stapes is not of double origin. The space corresponding to the medial wall of the tympanic cavity exists at the first month as an undifferentiated portion of the pharyngeal cleft, a separation of the tubo-tympanic space taking place in the first half of the second month by the nearer approach to each other of the dorsal and ventral wall of the pharyngeal cleft and by the advancement of a solid mesodermic layer, closing the tympanic cavity below. The paper was illustrated by drawings and preparations.

Barth, Marburg : *Remarks on the annular ligament of the stapes, and presentation of a preparation in which it is replaced by a true joint.*

The fibres of the annular ligament are continued some distance into the bone surrounding the fenestra as well as into the bone of the foot-plate of the stapes, running here almost perpendicular to the surface of the bone. The path which they follow in the bone is often three or four times as long as the transverse section of the bundle itself, this relation securing a very extensive firm attachment to the stapes. In a preparation from a guinea-pig it was shown how the stapes and the wall of the fenestra lie opposite each other almost in the form of a ball-and-socket joint with the surfaces of contact flattened. The joint space is bounded toward the vestibule and middle ear by a capsular membrane. The articulating surfaces are covered with a layer of flat endothelium.

BEZOLD, Munich : *Another case of bilateral anchylosis of the stapes diagnosticated in life, with autopsy, and manometric and histological examination.*—(To appear in full later.)

BEZOLD, Munich : *The hearing power in double congenital atresia of the external auditory canal with rudimentary auricle.*—(To appear later.)

DENKER, Hagen : *Presentation of a case of primary epithelial carcinoma of the cartilaginous and membranous auditory canal and auricle.*—(To appear later.)

Discussion.—BOCKEMÄHLE, of Münster, spoke of a case of cancer of the auricle operated on three years previously, with no recurrence in two years and a half. LEMCKE, of Rostock, reported a case of a small carcinoma scraped off five years previously with no recurrence. BARTH, of Marburg, recollected a case in which there were changes suggesting epithelioma, in both ears, which disappeared with the use of iodoform salve. JANSEN, of Berlin, had no recurrence in a case of carcinoma operated two years previously.

REINHARD, Duisburg : *The treatment of cholesteatoma of the temporal bone by a permanent opening behind the ear.*

The author stated that in cases of small uncomplicated cholesteatoma it sufficed to remove the osseous portion and the lateral wall of the antrum, securing a permanent opening in the posterior wall of the auditory canal, by the cuticularization of the cavity so obtained: He believed, however, that in the case of larger cholesteatomata, with caries and necrosis, it was best to secure a permanent opening through the auditory canal as well as through the lateral wall. In cases operated in this manner he had never seen a recurrence of the otorrhœa. The author sought to secure permanency of the opening behind the ear by carrying in a triangular skin flap from the scalp in Schwartze's manner, or by Thiersch grafts, or by taking a flap from the posterior surface of the concha, thus preventing the later growth of hair. The treatment lasted from two to nine months in the twenty-five cases of cholesteatoma operated by the author, thirteen of which were permanently cured, three died, four had recurrence of the disease, and five were still under treatment.

Discussion.—HARTMANN, of Berlin, in cases of extensive cholesteatomatous formation, when the cholesteatoma came near the surface, believed the maintenance of a permanent opening indispensable ; in cases of smaller cholesteatoma, one need only remove the anterior wall of the antrum and lay the attic open.

JANSEN, of Berlin, reported that in the Berlin clinic over 100 cases had been cured with a permanent opening, without often resorting to Schwartze's flaps and but rarely to any plastic procedure, though in some cases by the combination of Stacke's plastic method with a flap from the posterior surface of the auricle. The permanent opening does not prevent the recurrence of membrane formation or of suppuration. Treatment through the cavity of the wound is to be preferred, except in rare cases. Cholesteatoma occurs particularly in tuberculous individuals, and is frequently of tuberculous nature.

KRETSCHMANN, of Magdeburg, stated that cholesteatoma recurred almost without exception. The question whether a permanent opening should be made behind the ear could not yet be positively answered. When this is to be secured, the opening should be quickly covered with skin. The speaker preferred the flap operation, particularly that suggested by him, but believed that skin should be transplanted only on to bone that had been operated upon.

SIEBENMANN, of Basle, remarked that the transplantation of Thiersch grafts shortened the period of treatment, and that it could be performed in cases in which the small size of the cavity prevented the performance of Schwartze's flap operation.

HANSBERG, of Dortmund, believed that the formation of a permanent opening might almost without exception be dispensed with. The chief indication is the radical exposure of the cavity of the middle ear. The speaker permits the mastoid wound to close after five or six weeks, and carries on his treatment through the auditory canal.

NOLTENIUS, of Bremen, considers every secretion in the cavity, whether moist or dry, a recurrence. In this sense, there is no cholesteatoma without recurrence.

In closing the discussion, REINHARD stated that by recurrence was understood the re-establishment of suppuration. This is best prevented by keeping patulous not only the opening in the canal, but also that in the lateral wall of the mastoid. He could not share the optimism of Hansberg and Noltenius.

SECOND SESSION, AFTERNOON OF MAY 12TH.

Chairman : Dr. KUHN, of Strassburg.

HANSBERG, Dortmund : *Demonstration of plaster casts of the antrum of Highmore opened by operation, and of antrum obturators.*

The speaker showed a number of plaster casts of the antrum of Highmore, after it had been chiselled open, and of hard rubber obturators designed to close the operative opening. These obturators are attached to a palatal plate by a movable rubber joint, so that no pressure is made upon the alveolar process. The obturator, which may be easily removed and replaced, is to be worn as long as suppuration in the antrum continues.

BÜRKNER, Göttingen : *Report on the treatment of affections of the tube.*

The speaker called attention to the importance of catheterization when there was swelling or mucous secretion in the tube, and gave it preference over Politzer's procedure, which latter is nevertheless of value in simple cases. The fear of causing infection of the middle ear in cases of acute naso-pharyngeal or tubal affections is an exaggerated one, the neglect to inflate the middle ear often working more harm than the carrying of micro-organisms into the tympanic cavity, which may occur nevertheless every time the patient sneezes. The speaker then spoke of the various methods of catheterization to be used when there is obstruction in the nose, but considered special instruments unnecessary. The important measure in all simple tubal affections is gargling ; injections through the catheter are also recommended, but they should not be chemically irritating. The use of the bougie in the tube should not be carried to excess, this being indicated only when catheterization causes no improvement. The simultaneous employment of the bougie and of medicamentous treatment seldom gives good results, although the vibration massage by means of the bougie, as recommended by Urbantschitsch, is sometimes indicated. This method is, however, often painful, while the external massage, as recommended by Politzer, is not.

The speaker then referred briefly to the methods of treatment when there is atresia of the tube (electrolysis, excision of the drum-membrane and malleus), and when there is abnormal patulousness of the tube, and the important measures to be used when there are abnormal conditions in the nose and naso-pharynx (ulcerative processes, synechiæ, adenoid vegetations, and hypertrophy of the turbinates). He advised caution in the use of the galvano-cautery; when superficial effects are wished, escharotics, such as trichlor-acetic acid, are preferable.

Discussion.—Bezold, of Munich, agreed with the speaker that even in acute tubal affections the air douche should be used, and that the catheter is often preferable to Politzer's method of inflation even in children. Bezold in his numerous autopsies has never found atresia of the tube. The use of the bougie should be restricted.

Bresgen, of Frankfort-on-the-Main, earnestly recommended the removal of nasal obstructions which prevented catheterization, and greatly preferred chromic to trichlor-acetic acid.

Siebenmann, of Basle, stated that nasal obstruction had no etiological connection with tubal catarrh, since normal hearing and a normal position of the drum-membrane might be found with closure of the choanæ. Apart from that produced by adenoid vegetations he had never found stenosis at autopsies.

Barth, of Marburg, said that the more carefully he treated the nasal affection, the less he used the air douche for therapeutic purposes.

Fischenich, of Wiesbaden, spoke of redness and swelling of the turbinate bodies and their connection with swelling of the tubes. The latter is often cured by treatment of the nose, while inflation is of no benefit. When the swelling in the nose is not reduced by cocaine, he recommends the use of the galvano-cautery or snare; other cases he treats with trichlor-acetic acid.

Hartmann, of Berlin, uses inflation so long as he obtains improvement. The value of tubal injections is not to be underestimated, and cocaine acts favorably. The operative removal of nasal obstructions may often be dispensed with if thin, short-beaked catheters are used.

Lemcke, Rostock: *On acute caries and necrosis of the temporal bone after influenza.*

Among sixty-four cases of ear trouble in consequence of influenza, there were eleven in which opening of the mastoid was required, and four of these showed acute caries and necrosis. One case was that of a boy of five, the others were adults. In two cases the dura was exposed in the operation. The author compared this affection of the temporal bone after influenza, to the bone affection in acute osteomyelitis. He regarded his observations as a support of the idea that there is an influenza form of otitis, and that in some epidemics this not rarely affects the bone primarily or more severely, and compared with this bone process that threatens life, the changes in the middle ear are of little importance.

Discussion.—BARTH, of Marburg, called attention to the variation in different epidemics of influenza in respect to aural complications. In one epidemic he observed masses of unusually tenacious secretion in the middle ear; in another, violent middle-ear inflammations which were cured without perforation in a relatively short time.

JANSEN, Berlin, spoke of the unusually large number of mastoid operations which he had performed at the time of an outbreak of influenza. He, however, had never seen a condition resembling osteomyelitis.

EULENSTEIN, of Frankfort-on-the-Main, in the last epidemic, saw extensive diseased foci just beneath the cortex, which developed rapidly and without marked symptoms in the middle ear. He is of the opinion that in such cases the disease is often a primary ostitis. The diagnosis of this mastoid disease, which runs its course almost without a symptom, is facilitated by percussion of the mastoid process.

HARTMANN, of Berlin, stated that influenza bacilli mostly associated with other bacteria were found in 10 per cent. of the infants in the institution for infectious diseases in Berlin.

FISCHENICH, of Wiesbaden, agreed with Barth that influenza epidemics vary greatly in respect to the aural complications. In an earlier epidemic he frequently observed severe pain in the mastoid without caries, while in the last epidemic he saw many dangerous cases, some of which were similar to those described by Lemcke.

KOERNER, of Frankfort-on-the-Main, agreed with Eulenstein that many of the cases of mastoid disease following influenza do not originate in the tympanic cavity, but affect it secondarily. The process is mostly localized in the diploic bone; the pneumatic cavities and the tympanic cavity being only affected later. In considering the development of acute mastoid disease, the part played by the pneumatic cavities has been overrated, and that by the diploë not sufficiently recognized.

Lemcke said in conclusion that the cases of mastoid caries and necrosis running a violent course had been compared to osteomyelitis only as regards their clinical aspect and not their etiology. The discussion had shown, however, that caries and necrosis following influenza were not rare.

Koerner, Frankfort-on-the-Main : *On plastic operations on the meatus.* The cuticularization of a large operative cavity in the bone presents many difficulties. The speaker had therefore endeavored to obtain union of the cutaneous incision made for drawing the auricle forward and detaching the meatus, with a single dressing, and to get a permanently widened and straight canal, and to hasten cuticularization. For this purpose he makes a skin flap, with its base at the auricle, consisting of a portion of the cymba conchæ and the entire posterior portion of the cartilaginous membranous meatus. The dressing is usually left 10 days, in which time the cutaneous incision behind the auricle is completely healed. In three cases treated by the author in this manner, the cavity became lined with skin on an average in 72 days, while the healing after Stacke's operation, according to the experience in the Halle clinic, required 120 days on the average.

THIRD SESSION, SUNDAY MORNING MAY 13TH.

Kuhn opened the session, and read a telegram of greeting from Professor Politzer.

Before passing to the programme of the day, **Wall**, of Bonn, showed two patients operated upon by Professor Witzel by the method which they had employed in treating acute mastoid abscess and chronic mastoid affections. In cases of acute abscess the entire mastoid is laid bare and opened with a chisel from the tip upward and healing by first intention is often obtained. In chronic cases the opening is made posteriorly, and the fresh wound covered with Thiersch flaps.

Walb, Bonn : *Conservative or radical?*

The speaker stated that, notwithstanding the great progress in aural surgery, it was not right to operate in every case of chronic otorrhœa. That the conservative method might give good results was shown by the great number of cases cured previously without operation. Even after operation there may be recurrence of the suppuration. Schwartze's relatively conservative mastoid operation, which preserved the function to the greatest extent, is indicated in many cases.

Kuhn, of Strassburg, spoke of a case of acquired atresia of the canal arising in a girl of fifteen, from a blister continued for a year. The excessive distortion and the contraction of the opening were relieved by the removal of triangular segments from the cartilage of the auricle.

Jansen, of Berlin, by means of a model, demonstrated a plastic procedure for operating on the canal by means of the transplantation of pedunculated skin flaps from the mastoid region to the posterior wall of the canal, and from the posterior surface of the auricle to the anterior wall of the canal after excision of the cicatricial and swollen tissue. This operation was made twice in 1891 with permanent effect.

Kuhn, of Strassburg, reported a case of *myxo-sarcoma* of the *tympanic cavity* in an infant. In spite of repeated extirpation of the new growth, the patient died of marasmus after a few months.

Hartmann, Berlin: *Middle-ear inflammation in young infants as observed in the Institution for Infectious Diseases in Berlin.*

The results of the examination of 47 cases were as follows:

1. The observation that at the autopsies of infants middle-ear inflammation is found in 75 per cent. is confirmed by the examination of living infants.
2. The middle-ear inflammation may be detected almost without exception by otoscopic examination.
3. The symptoms of middle-ear inflammation are restlessness, increase in temperature, and loss of weight. These symptoms are sometimes wanting.
4. Middle-ear inflammation is frequently complicated with broncho-pneumonic processes, both probably being due to the same cause (aspiration).
5. Death may result from a progressive atrophy in consequence of middle-ear inflammation, or the micro-organisms may pass into the cranial cavity and cause meningitis, or into the blood and cause septicæmia.
6. Middle-ear inflammation in young infants must be treated.

Siebenmann, of Basle, finds in Hartmann's observations a support for the view that a number at least of the middle-ear inflammations which develop with infectious diseases are not due to infection from the pharynx, but are to be considered a symptom of the underlying infectious disease, primarily located in the ear.

KESSEL, Jena : *Report on anterior tenotomy, and mobilization and extraction of the stapes.*

The speaker endeavored to show from clinical experience and the results of operations that success can be obtained only when the acoustic nervous apparatus is intact. The preservation of the nerves is therefore the aim of the functional treatment. Anterior tenotomy of the drum membrane, the nerves being healthy and the stapes mobile, does not cause any marked disturbance of accommodation, and an acuteness of hearing is preserved of 25 *m* for the whisper. Removal of the drum-membrane with the malleus and incus secures an acuteness of hearing of 10 *m* for the whisper, when the tympanic cavity has no particular changes, the stapes is mobile, and the stapedius muscle normal in function. By removal of the stapes under favorable circumstances an acuteness of hearing of 8 *m* for the whisper is obtained, but the difference in labyrinthine pressure causes disturbance, and requires an apparatus which will replace the mechanical middle-ear apparatus as far as possible and regulate the labyrinthine pressure.

Discussion.—BEZOLD, of Munich, thought the hearing power obtained by the speaker after removal of the stapes excessively high, and inquired whether he had found symptoms of giddiness.

STEINBRÜGGE, Giessen : *Demonstration of preparations from a congenital deformity.*

The preparation, from a man of fifty-four, lacked the drum-membrane, the tympanic cavity, and the antrum ; the auricle was wrinkled. The membranous labyrinth and the nerves, with the exception of a small portion in the internal meatus and modiolus, showed no changes. The labyrinth capsule was sclerotic, the Fallopian canal was displaced forward, the jugular fossa was narrowed, and the axis of the cochlea shortened.

KOERNER, Frankfort-on-the-Main : *The latest progress in the treatment of otitic brain disease.*

Of the cases operated without ligation of the jugular, 43 per cent. are cured ; of those with ligation of the jugular after clearing out the sinus, 56 per cent. ; in cases in which the jugular is previously ligated, recovery occurs in 69 per cent.

GUYE, Amsterdam : *A case of pachymeningitis externa ex otitide cured by trephining.* To appear later.

JOËL, Gotha : *A contribution to cerebral surgery.*

Two months and a half after the opening of the mastoid, and the opening of a gravitation abscess, in a young man, cerebral symptoms developed. The dura was incised, and an opening made into the brain, with the discharge of fetid pus. The case recovered in six months.

In a boy of eleven, in whom the malleus had been removed and the osseous portion of the outer wall of the tympanic cavity chiselled away, cerebral symptoms developed two months later. The mastoid and tympanic cavity were freely opened, the squamous portion chiselled away above and anterior to the antrum, and the dura removed from the tegmen. The dura presented in the cavity under great pressure, and was incised, but no pus was found. In the course of the after-treatment a cerebral prolapse was cut off, with transient aphasia. Recovery in eleven months. In the opinion of the speaker it was not a case of purulent leptomeningitis.

HANSBERG, Dortmund : *A contribution to the question of the operation for otitic cerebellar abscess.*

A boy of fourteen, suffering from otorrhœa since his sixth year. Swelling of the mastoid, chills. Diagnosis : sinus thrombosis. March 15, 1894, opening of the mastoid, which was filled with putrid pus. A defect in the sigmoid sulcus. Extensive removal of the latter and of the entire posterior portion of the mastoid internal to the outer semicircular canal, and removal of a portion of the skull above the transverse sinus. A cavity in the brain the size of a pigeon's egg, with a fistula. When the dressing was changed on the fourth day a second abscess was found higher up and opened. Death April 14th.

At the autopsy an abscess was found in the posterior fossa, which involved the temporal lobe and not the cerebellum.

The author spoke of the difficulty in diagnosing cerebellar abscess, and advised for its treatment the extensive opening of the mastoid and laying bare the cerebellum.

REINHARD, of Duisburg, reported a case of sinus phlebitis of otitic origin cured by extensive chiselling of the mastoid and opening of the sinus.

JANSEN, Berlin : *Experiences with sinus thrombosis in Lucae's clinic during the year 1893.*

Twelve cases were seen, in two suppuration in the bulb only, in one thrombosis of the cavernous and superior petrosal sinuses.

In the nine other cases the transverse sinus was involved, six times together with the jugular and twice with the cavernous sinus. The author thought from these statistics that it might be possible by early and energetic operative procedures to limit the thrombosis to the transverse sinus or to have only an isolated thrombosis of the bulb of the jugular to deal with. The chief dangers in sinus thrombosis are metastases in the lungs, and purulent arachnitis, but these vary in frequency according to the sinus affected. In cases of jugular thrombosis, pyæmia and metastases occur in 76.5 per cent., in transverse-sinus thrombosis in 35.5 per cent., in inferior-petrosal-sinus thrombosis in 30 per cent., in cavernous-sinus thrombosis not at all. Pyæmia through osteo-phlebitis without involvement of a large portion of the vein is, according to the author's experience, very rare. When pyæmia persists after a mastoid operation, thrombosis of a large portion of a vein should be suspected. In pure sinus thrombosis without degeneration, symptoms may be completely wanting. The most important symptoms are pyæmic fever with chills and metastases, optic neuritis, signs of meningeal irritation, and signs on the part of the jugular veins. Of particular importance is the abscess outside the sinus, whose early diagnosis though difficult is of great practical value, as by emptying it the formation or the purulent degeneration of a thrombus may be prevented. The speaker added some remarks on the operation, taking the standpoint that thrombosis limited to the sinus should be operated upon only in the sinus.

REINHARD, Duisburg: *Observations on cerebral complications after otorrhœa.*

(a) Circumscribed cerebral tuberculosis, diffuse arachnitis following perforating pachymeningitis in cholesteatoma.

(b) A cured case of circumscribed purulent pachy-lepto-meningitis on the inferior surface of the left temporal lobe. Division of the diseased membranes; transient optic aphasia.

HARTMANN, Berlin: *Some means for the destruction and removal of tumors in the naso-pharyngeal cavity.*

1. A galvano-cautery snare with detachable handle.
2. Resection of the inferior turbinated body.
3. A self-retaining palate retractor.

Demonstration of photographic wall charts, enlarged from photographs from Dr. Hartmann's collection.

SIEBENMANN, of Basle, showed an atlas of the labyrinthine vessels and a dry-corrosion preparation of the temporal bone.

REPORT ON THE PROGRESS OF OTOLOGY DURING THE FIRST HALF OF THE YEAR 1894.

I.—NORMAL AND PATHOLOGICAL ANATOMY, HISTOLOGY, AND PHYSIOLOGY OF THE EAR AND NASO-PHARYNX.

By Prof. AD. BARTH, Marburg.

Translated by Dr. A. Duane, New York.

A.—ANATOMY.

a.—ORGAN OF HEARING.

1. Rohrer, F. Cases of congenital "coloboma lobuli auriculæ." *Arch. f. Anat. u. Physiol.*, *Anat. Abth.*, p. 148, 1894.

2. Rohrer, F. Anomalies of formation of the auricle. (Report of the 65th meeting of the Society of German Scientists and Physicians, held at Nürnberg.) *Wien. med. Wochenschr.*, No. 1, 1894.

3. Manasse, P., Strassburg. On granulation-tumors containing giant-cells produced by foreign bodies. (One plate.) *Virchow's Archiv*, vol. cxxxvi., 1894.

4. Haug (Munich). Contribution to the clinical history and microscopical anatomy of the new growths of the external and middle ear. (Two plates.) *Arch. f. Ohrenheilk.*, vol. xxxvi., p. 170.

5. Peter. The Eustachian tubes and their appendages in the mammalia. *Arch. f. mikroskop. Anat.*, vol. xliii., part 2.

6. Ludwig, C. The path of the blood-current through the vestibule and the semicircular canals of man. After observations by O. Eichler made in the Physiological Institute in Leipzic.

Transactions of the Royal Scientific Society of Saxony (Mathematico-physical Section), 1894, vol. xxi., No. 1.

7. SCHÄFER, K. L. On the embryology of the semicircular canals. *Naturw. Wochenschr.*, vol. ix., No. 21.

8. VON LENHOSSEK, M. (Würzburg). Contributions to the histology of the nervous system and sensory organs. Part 1. The termination of the nerves in the maculæ and cristæ acusticæ. Bergmann (Wiesbaden), 1894.

9. NIEMAK, J. Maculæ and cristæ acusticæ examined by Ehrlich's methylene-blue method. *Anat. Hefte*, vol. i., part 5.

10. DUPUIS, A. Corti's membrane. A contribution to the anatomy of the internal ear. (Two plates.) From the Otiatric Polyclinic in Marburg. Inaugural Dissertation; also *Anat. Hefte*, vol. iii., part 3.

11. CANNIEN, A. Researches upon the roots, branches, and ganglia of the auditory nerve. *Rev. de laryngol.*, etc., Nos. 7 and 8, 1894.

12. BUMM, A. Experimental investigations with regard to the corpus trapezoides and the auditory nerve of the cat. Paper in celebration of the 150th anniversary of the founding of the University of Erlangen. Wiesbaden, 1893.

13. KIRILZEW. A further communication (No. 5) with regard to our knowledge of the central course of the auditory nerve. *Neurol. Centralbl.*, No. 5, 1894.

14. OSTMANN. Upon the dependence of the shape of the external auditory canal upon the shape of the skull. *Monatsschr. f. Ohrenheilk.*, No. 3, 1893.

1. ROHRER describes and figures six particularly interesting cases of congenital fissure of the lobule.

2. ROHRER figures sixteen cases of abnormally formed auricles illustrating the chief types which the anomalies of shape assume. Even in the mentally sound such anomalies are found in nearly 30 per cent. of all cases observed, and it cannot be denied that in those suffering from mental disorders and in criminals they are still more frequent. For further particulars the reader must refer to the report of the society's proceedings.

3. MANASSE publishes nine cases of granulation tumors in the middle ear, which had no connection either with tuberculosis or syphilis. In all, giant-cells were found which were connected in some way with clumps of epidermis or with cholesterin crystals.

They accordingly belong to the class of foreign-body giant-cells. They are regarded as arising from the endothelium of the lymph-vessels. It appears that in these cases the lymph-passages opened by a free orifice upon the surface of the granulation tissue. Manasse has succeeded in producing foreign-body giant-cells experimentally in dogs.

4. HAUG describes a series of anatomical preparations obtained in his own practice, and illustrating a variety of tumors found in the external ear.

6. EICHLER, who so unfortunately for science died prematurely, has left in continuation of his former work a set of drawings, which are published by LUDWIG, with a brief explanatory text. Without attempting to reproduce the particulars as to the vascular distribution, which Eichler has demonstrated, we adduce simply one of the conclusions drawn from them by Ludwig. This is that, owing to greater vascularity, the exchange of matter is more pronounced in the endolymph than in the perilymph, and the influence of similar differences in the circulation is manifest also in other parts of the labyrinth and cochlea.

7. SCHĂFER from observations upon the tadpole confirms the statement of Böttcher and Krause that the semicircular canals are developed by formation of pouches and folds. The vertical canals develop from a single common pouch. The formation of the ampullæ takes place at the same time as that of the semicircular canals. The cristæ acusticæ can be recognized very early in the form of an epithelial thickening.

8. By using Golgi's method of staining, as modified by Cajal, LENHOSSEK proved that the fibres of the auditory nerve always end in the sensory epithelium of the auditory organ in free branches, and that the relation of the terminal fibres to the hair-cells is always one of simple contact. Starting from the ganglion-cells of the auditory nerve, the fibres in the first stages of their development grow in two directions—towards the brain and towards the terminal nervous apparatus. Each nerve fibre is not simply connected with one hair-cell, but by undergoing division is in relation with a whole set of cells.

9. NIEMAK found that in the frog's ear the nerve fibres, after escaping from the basilar membrane, form by repeated division a subepithelial network and afterwards a sieve-like intraepthelial plexus, often consisting of several layers. From this latter arise two sets of fibres : one set ending free, the other connected with

one or more of the lower hair-cells. There seems to be a sort of intermediate substance, which effects the communication between the nerve and the cell, so that there is no continuity, nor even a direct contiguity, between the two. The idea that there is an envelope of very minute fibrillæ surrounding the hair-cells must almost certainly be discarded. In Mammalia the nerves, on passing through the basilar membrane, form a network of fibres, with very large meshes and occasional thickenings at the points of intersection. From the network arise filaments which do not show a fibrillary composition, but which consist of uniformly fine or coarse granules. Each of these filaments seems, in the more central portions, to supply only one or two, but in the marginal region several cells, and in the latter situation, consequently, is branched and assumes a shape like that of a stag's antlers. Into the cup-shaped granular masses thus formed the hair-cell fits. The basal network unites the separate terminal apparatuses into a single physiological whole.

10. DUPUIS shows that three zones are distinguishable in Corti's membrane, and describes each of them minutely. The following are the important facts: Upon the lower surface of the innermost zone is found a network whose meshes are large and whose appearance varies much in different species of animals. It should probably be regarded as formed of a cement-substance. The boundary line between the first and second zones is found only in hardened preparations, and must hence be considered as an artificial product. Löwenberg's network, however, can be isolated and must be regarded as the third zone. The position of the membrane can be only approximately determined. The first zone is attached to the labium vestibulare. The outer part of the second zone probably rests upon Corti's organ, and by exerting a certain degree of tension influences the position of the latter. The third zone, consisting of a thin network, lies upon Hensen's and Claudius's cells, and in close contact with them. It finally is lost near the vas prominens of the ligamentum spirale.

13. According to KIRILZEW, the internal nucleus and Deiters's nucleus are not the terminal areas for the posterior root of the auditory nerve. The anterior nucleus, the tuberculum acusticum, both superior olivary bodies, and the posterior corpus quadrigeminum of the opposite side are the primary centres of the cochlear nerve. The fibres of the posterior root, which terminate in the superior olivary bodies and in the posterior corpus quadri-

geminum, run to the former by way of the corpus trapezoides, and to the latter by way of the corpus trapezoides and the fillet (lemniscus). The course of the striæ medullares, which is minutely described, necessitates the assumption that they represent an association-tract connected with the centres, and in close relationship with the primary centres of the posterior root of the auditory nerve. The inferior fillet contains fibres to the superior olivary body on the same side, connecting the latter with the posterior corpus quadrigemimum. In the corpus trapezoides the fibres of the inferior fillet run to the anterior nucleus, and connect the latter with the inferior corpus quadrigemimum of the opposite side. The anterior root probably passes partly into Bechterew's nucleus, partly descends into the ascending root of the auditory nerve described by Roller. An extensive work upon this subject is promised.

14. From OSTMANN's investigations it would seem that dolichocephalic skulls usually have circular, brachycephalic skulls oblong-oval auditory canals. KILLIAN.

b.—NASO-PHARYNGEAL CAVITY.

15. SCHADEWALD, O. Bleeding polypus of the nasal septum. *Archiv f. Laryngol. u. Rhinol.*, vol. i., p. 259.

16. ALEXANDER, A. Remarks upon the anatomy of "bleeding polypi of the septum." *Ib.*, p. 265.

17. SCHEIER, M. Contribution to the question of bleeding polypi of the septum. *Ib.*, p. 267.

18. HEYMANN, P. Upon the question of bleeding tumors of the nasal septum. *Ib.*, p. 273.

19. ESCAT, E. Anatomical evolutions and transformations of the naso-pharyngeal cavity. Thesis for the degree of doctor. Paris, 1894.

15, 16, 17, 18. The growths described by SCHADEWALD and the other authors cited above consisted of a connective-tissue framework infiltrated with round cells. Elastic fibres also were occasionally seen. Hemorrhages were found quite frequently. Blood-vessels were not always conspicuously present, but in some places there was an abundance of lymph-spaces. The tumors were lined partly with flat, partly with cylindrical epithelium, and in the deeper layers glands were frequent. The tumors were invariably benign.

19. **Escat**'s profusely illustrated work is based upon forty-two autopsies. He finds that in infants and children (and also in women as compared with men) the sagittal diameter of the naso-pharynx predominates, as compared with the vertical, producing an antero-posteriorly elongated cavity. In such cases the posterior nares are more readily obstructed than in those of the opposite type. In brachycephalic skulls the transverse diameter, in dolichocephalic skulls the sagittal diameter is greater. The anterior and posterior borders of the vomer usually show correspondence as regards their degree of inclination. The author concludes with a description of the anomalies of development of the third tonsil and the recessus medius. **Gellé.**

B —PHYSIOLOGY AND PHYSICS.

a.—ORGAN OF HEARING.

20. **Matte**, F. Experimental investigations upon the labyrinth in doves. *Fortschr. d. Medicin*, No. 4, 1894.

21. **Schäfer**, K. L. (Rostock). The function and the development of the function of the semicircular canals. From the Rostock Physiological and Anatomical Laboratory. *Zeitschr. f. Pyschol. u. Physiol. der Sinnesorgane*, vol. viii.

22. **Beauregard**, H. Note upon the part played by the organ of Corti in audition. *Comptes rend. de la soc. de biol.*, No. 22.

23. **Ewald**, J. R. The central origin of the beats produced by two tones heard in one ear. From the Physiological Laboratory of the University of Strasburg. *Pflüger's Arch. f. Physiol.*, 1894, vol. lvii.

20. **Matte** found that by introducing a sound into one of the semicircular canals of one ear pendulum-like movements were produced in the plane of the canal operated upon, and when sounds were introduced into the semicircular canals of both ears, the intensity of these movements increased, and a disturbance of the movements of the body was caused. If the operation was performed upon canals situated symmetrically in the two ears movements were produced in the median plane. Inasmuch as these phenomena ceased after the sounds were withdrawn, they must be regarded as symptoms of irritation simply. If the labyrinth is completely removed on one side, disturbances of equilibrium set in, but not until after a week had elapsed, and they disappeared

again after removal of the other labyrinth. In doves deprived of the labyrinth no signs of a perception of sound could be made out to exist. In two or three weeks after the operation the fibres of the auditory nerve were found to be degenerated as far as the central ganglia.

21. From SCHÄFER's earlier studies it is pretty certain that invertebrates do not exhibit any evidences of vertigo directly after being rotated upon a revolving disc,[1] and that in this respect there is a sharp contrast between vetebrates and invertebrates, that is between animals with and without a labyrinth. In tadpoles a vertigo produced by rotation does not occur until the development of the semicircular canal is complete. This fact is regarded as of eminent importance as fitting the requirements of the theory that the labyrinth is a static organ.

b.—NASO-PHARYNGEAL CAVITY.

24. AROHNSOHN, E. An attempt at a nomenclature of the qualities of smell. Paper presented at the Laryngological Section of the Eleventh International Congress held at Rome, 1894. *Arch. f. Laryngol.*, vol. ii., part 1.

24. Starting with the idea that different fibres of the olfactory nerve possess varying degrees of energy, AROHNSOHN invents terms for different groups of olfactory qualities, based upon the chemical symbols of some one representative of the class of odors in question. Time alone will tell whether the whole system which he advocates has any value at all other than as a mere plaything.

II.—PATHOLOGY AND THERAPEUTICS.

By Dr. ARTHUR HARTMANN, Berlin.

Translated by Dr. A. DUANE, New York.

GENERAL LITERATURE.

1. GRUNERT. Annual report of the aural clinic of the Royal University of Halle from April 1, 1892, to March 31, 1893. *Arch. f. Ohrenheilk.*, vol. xxxvi., p. 278.

2. DE ROALDES, A. W. Report of Ear, Nose, and Throat Hospital of New Orleans for 1893.

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[1] How does this statement agree with the fact that many of these animals seem to have a static organ?—REVIEWER.

3. SCHWARZBACH, B. Notes on noises in the head. *Australasian Gazette*, Feb. 15, 1894.

4. GUDER, E. Contribution to the study of the question of reflex cough and particularly of auricular cough *Rev. de laryng. et d'otol.*, 1894, No. 6.

5. TSAKYROGLOUS, M. (Smyrna). Aural affections following parotitis epidemica. *Monatsschr. f. Ohrenheilk.*, 1893, No. 10.

6. HUTCHINSON, JONATHAN. Syphilitic inflammation of the ear. *Arch. of Surg.*, April, 1894.

7. POLITZER, A. A new anatomical condition found in deaf persons. *Wien. med. Blätter*, 1894, No. 24.

8. NAGER, G. Tests of hearing made in the city schools of Luzerne in the years 1892–3. Reprint from the Annual Report of the City Schools of Luzerne.

9. COËN, R. Acoustic exercises for improving the capacity for speech and hearing. *Wien. med. Wochenschr.*, 1894, No. 5.

10. BARCLAY, ROBERT. On the relation between diseases of the teeth and ears. *Dental Cosmos*, May, 1894.

11. BARCLAY, ROBERT. Behavior of the ear in fracture of the base of the skull. *St. Louis Med. and Surg. Jour.*, May, 1894.

12. Summary of diseases presented for treatment at the Throat Department of the New York Eye and Ear Infirmary, from October 1, 1891, to October 1, 1893. *N. Y. Eye and Ear Infirmary Reports*, vols. i. and ii., 1893–4.

13. Report of diseases treated at the Throat Department of the Manhattan Eye and Ear Hospital, during the year 1893. *Manhattan Eye and Ear Hospital Reports*, 1894.

1. GRUNERT reports that in the past year 1636 patients were treated in the Halle ear clinic, 201 of whom were in the hospital department.

The operation of opening the antrum was performed 71 times, and in 47 with a permanent good result. Extraction of the malleus through the auditory canal for the relief of chronic suppuration with fistulæ situated high up was done 7 times with 4 cures. Of the 5 cases of extraction of both malleus and incus 3 were cured.

"Cases of isolated caries of the ossicles have turned out to be comparatively rare. Usually such caries is complicated with caries of the wall of the attic and of the mastoid antrum. In our experience the outlook for obtaining a prompt relief of suppuration by extracting the malleus and incus is favorable only when we are dealing with simple intermediary perforations in the drum-membrane, that is with perforations in Schrapnell's membrane or in the postero-superior portion of the membrana tympani, which corresponds to the region of the long arm of the incus."

The fatal cases are described at length :

1. Death from hemorrhage into the right internal capsule and the ventricle (aneurism ?). No connection with the chiselling of the mastoid, which was done a month before.
2. Death during the operation, due to extreme anæmia. In this patient (a child), a retro-auricular abscess had been incised the day before reception into the hospital, and the bleeding had not been arrested.
3. Chronic suppuration with caries in both ears; purulent meningitis without symptons, existing before the date of reception into the hospital; cerebral abscess.
4. Chronic suppuration of the left ear with caries; meningitis. "It is to be assumed that the infection of the meninges did not result till the fourth month after the operation. Possibly the cauterization of the luxuriant granulations in the operation-wound was accountable for the progress of the suppuration into the cranial cavity."
5. Chronic suppuration in both ears; otitic cerebral abscess. "The discovery, upon autopsy, of a large abscess in the temporal lobe surprised us greatly. There was not a single symptom during life that would have led us to suppose the existence of such a condition."
6. Tubercular basilar meningitis. Not operated upon.
7. Death from meningitis which was in existence before the time of the operation (which was done for cholesteatoma).

RUMLER, Berlin.

2. DE ROALDES reports that during 1893 there were treated at the Ear Department of the New Orleans Eye, Ear, and Throat Hospital, 1221 ear patients and 684 nose patients. These are all well tabulated as regards age, sex, and color. There were two cases of chiselling of the mastoid and antrum.

SWAN M. BURNETT.

3. SCHWARZBACH insists upon the importance of treating cases of noises in the head experimentally, even when the exact etiology and pathology cannot be determined, on the hope of hitting upon some remedy by chance. He instances a case in which Lucae's treatment by counter-sounds had an unexpectedly good result.

U. PRITCHARD.

4. In Wyss's clinic (Ghent) GUDER succeeded in producing by

irritating the external auditory canal, a reflex cough, such as is so often caused by foreign bodies, particularly when dry and movable, in 21 per cent. of 200 patients suffering from the most various kinds of disease. Two of the cases of cough due to foreign bodies were observed. This reflex was found mainly in the second decade of life and especially in male patients. The cough is not the only reflex set up, since gastric, sexual, and cardiac disturbances may make their appearance; and the auditory canal is not the sole point of origin of reflex cough, since the latter may also have its starting-point in the pharynx, œsophagus, stomach, etc. In the auditory canal the postero-inferior wall is the only part irritation of which (by causing stimulation of the auricular branch of the pneumogastric) is able to cause reflex cough in persons who are not otherwise diseased and particularly in those who are not nervous. ZIMMERMANN (Dresden).

5. TSAKYROGLOUS has observed as a result of parotitis epidemica various phenomena which are indicative of a slight inflammation of the labyrinth. KILLIAN.

6. HUTCHINSON suggests that the secondary syphilitic affections of the middle ear are very analogous to the similar affections of the eye, and like these latter demand prompt and energetic antisyphilitic treatment. In the tertiary stage, he believes that the ear affections are less important and seldom permanent.

U. PRITCHARD.

8. NAGER has made exhaustive examinations of 1127 scholars in the primary and secondary schools of Luzerne. These gave very unfavorable results, namely 40.39 per cent. of deafness. The abnormally high ratio of disease depends mainly upon the comparative frequency with which catarrh of the Eustachian tubes occurs, and, according to the author, is caused by the dampness of the lake-climate. The unfavorable influence which, as the author proves statistically, deafness exerts upon the capacity for learning, calls pressingly for the establishment of special classes (for those deficient in sensory perception). SIEBENMANN.

9. COËN confirms Urbantschitsch's statements with regard to the possibility of obtaining marked improvement of the hearing in the deaf by means of acoustic exercises. Coën's cases relate to persons who have suffered from more or less marked deafness and from a consecutive total or partial loss of speech or from general stammering. Coën has no experience with respect to the availability of this method for the instruction of deaf-mutes. POLLAK.

10. **Barclay**, after going over the ground again of the connection between diseased teeth and affections of the ears, reports two cases in which persistent pain in the ear was relieved by extraction of diseased teeth on the same side. Swan M. Burnett.

11. **Barclay** relates the histories of three cases of injury to the head in which the ear was immediately implicated. In one there was the usual serous discharge with a perforation of the *Mt* on one side, which recovered. The therapeutics consisted in keeping it clean with peroxide of hydrogen. In the second the discharge was bloody at the beginning and afterwards was profusely serous; *Mt* ruptured. The patient died. In the third there was left facial paralysis and constant hemorrhage from the left ear for thirty-six hours, and a severe tinnitus. The *Mt* was ruptured. The patient recovered fair hearing power.

Swan M. Burnett.

12. The total number of diseases of the nose and throat treated at the New York Eye and Ear Infirmary during the year ending October 1, 1892, was 1889, and during the year ending October 1, 1893, 1648; the number of operations performed during the first year was 360; during the second, 398. M. Toeplitz.

13. The number of diseases of the nose and accessory sinuses treated at the Manhattan Eye and Ear Hospital was 2058; of the mouth and pharynx, 784; the number of operations performed on the nose and rhino-pharynx was 438; on the mouth and pharynx, 144. M. Toeplitz.

INSTRUMENTS AND METHODS OF EXAMINATION AND TREATMENT.

14. **Rohrer** (Zurich). Upon the perception of the high and the deep tones in affections of the labyrinth, etc., and of the auditory nerve. Paper presented at the 65th meeting of the Association of German Scientists and Physicians.

15. **Eulenstein, H.** (Frankfurt a. M.). The applicability in diagnosis of percussion of the mastoid. *Monatsschr. f. Ohrenheilk.*, 1894, No. 3.

16. **Lucae.** Upon some essential improvements in his elastic pressure-sound and its therapeutic application in certain forms of chronic disturbance of hearing. *Berlin. klin. Wochenschr.*, 1894. No. 16.

17. **Kirchner** (Würzburg). Apparatus for the gymnastic exercise of the drum-membrane and ossicles. *Monatsschr. f. Ohrenheilk.*, 1893, No. 10.

18. VON STEIN, STANISLAUS (Moscow). A further contribution to the question of employment of trichloracetic acid. *Ibid.*, 1894, No. 1.

19. NORTH, JOHN. A new portable air-compressor. *New York Med. Rec.*, June 2, 1894.

20. HOUGHTON, HENRY C. Music as a means of aural massage. *Journ. of Ophthalmol., Otol., and Laryngol.*, April, 1894.

21. MÜLLER, J. A means of diagnosticating suppuration in the mastoid process. *Wien. med. Wochenschr.*, 1894, No. 11.

14. In the cases which ROHRER groups under what he calls "Torpor nervi acustici," the perception of high tones (Galton 1.8) was perfectly retained; while in 27 out of 30 patients examined with Bezold's C^4 tuning-fork this tone also was perceived. In the other labyrinthine affections, on the other hand, the upper limit of tones proved to be lowered (generally to 3.15 of the Galton whistle), while the perception of the deeper tones was well preserved. SIEBENMANN.

15. In 9 cases of mastoid disease observed by EULENSTEIN percussion gave a positive result in 6, in all of which there was a large mass of diseased tissue. A negative result from percussion is no proof, according to Eulenstein that disease is not present, a fact which Moos was the first to point out. KILLIAN.

16. The improvement in the instrument which LUCAE presented at the first meeting of the German Otological Society in the spring of 1892, consists in the addition of what he calls a stuffing-box, which enables the operator to introduce the sound safely and without jerking. The sensitiveness of the short process is blunted as far as possible by the application of moist cold during the operation. For this purpose the bulb of the sound is wound with cotton and immersed for some time in a freezing solution of cocaine. Under these conditions the pressure-sound can be applied more frequently and more energetically, and hence better therapeutic results are obtained and, moreover, affections of the sound-conducting apparatus can, by the expert, be differentiated from those of the labyrinth, as they could not be before. RUMLER.

17. KIRCHNER's apparatus consists of a rubber tube provided with a nozzle at one end for the mouth and one at the other end for the ear. A glass bulb with a plug of cotton for filtering the air is intercalated between the two ends. By means of this apparatus the patient can readily produce rarefaction and condensa-

tion of the air in the auditory canal. Kirchner in suitable cases has this exercise carried out from one to three times a day for a few minutes at a time. Killian.

18. Von Stein shows that even in very weak solutions (1:1500 or 2000) trichlor-acetic acid prevents putrefaction and is hence adapted for the after-treatment of wounds in the nose and throat. In ozæna the foul odor disappears rapidly, and the formation of crusts diminishes under the application of ½–10 per cent. solutions, which must be rubbed thoroughly into the mucous membrane everywhere. In order to strictly localize applications of caustics made to the nose, Von Stein uses Zaufal's fenestrated specula.

Killian.

19. North's portable air compressor is to be used at the bedside, and its two rubber bulbs are compressed alternately by the foot. It is ten inches long, two and a half inches wide, and four inches high, is made of rubber and metal, and weighs five pounds. The instrument is made by O. R. Bonnewitz & Co., of Toledo, O.

M. Toeplitz.

20. Houghton is convinced from his experience that aural massage by music is a most valuable means of treating certain forms of chronic deafness, and that it is safe in skilful hands, but liable to do damage in the unskilful, and that it is useful in prognosis. The form of instrument which he uses now is the adaptation of the Engelmann induction apparatus, which consists in placing in the secondary current a magnet acting on a metallic diaphragm, the vibrations of which are conveyed to the external auditory canal by an ordinary stethescope. The interruptions are regulated so that there can be obtained vibrations from 5000 per minute to the highest. Swan M. Burnett.

21. Müller employs in the following way Gabritschewsky's pneumatoscope for determining the pneumatic condition of the mastoid process in order to diagnosticate the presence of collections of pus in the latter. The patient places the sound-receiver of the pneumatoscope in his mouth. The bulbs of the two arms of the otoscope which is connected with the receiver are inserted in the ears of the examiner. The latter now places a C^2 tuning-fork upon the patient's mastoids, beginning with that of the affected side, and keeping it there until the sound ceases. The fork will then be heard again for some moments longer if the physician places it (without striking it again) upon the mastoid of the sound side. Pollak.

EXTERNAL EAR.

22. Ziem, C. Upon the removal of foreign bodies from the auditory canal. *Monatsschr. f. Ohrenheilk*, No. 3, 1893.

23. Schmiegelow, E. Foreign body in the tympanic cavity. Extraction. Tetanus. *Rev. de laryngol. et d'otol.*, No. 5, 1894.

24. Hovver, T. Pierce. Macrotia. A report of six cases with malformations. *Manhattan Eye and Ear Hospital Reports*, Jan., 1894.

25. Thorner, Max. Pathological conditions following piercing the lobules of the ear. *Journ. Amer. Med. Assoc.*, Jan. 27, 1894.

22. Ziem's first case was one of a pea which was removed from the auditory canal by the galvano-cautery and instillations of oil; his second one, of a coffee-bean, removed by instillations of oil alone.

23. Schmiegelow's case was that of a four-year-old boy who had put a stone into his left ear. The stone had been driven into the middle ear by instrumental manipulation in the hands of a physician. Eleven days afterwards an abscess formed about the auditory meatus, and then the stone was extracted, the auricle and membranous canal being detached for this purpose. The wound was sewed up. On the second day pain in the temporo-maxillary articulation set in, and on the third day convulsions, and rigidity of the neck and extremities—in a word, typical tetanus. On the sixth day the child died. The author thinks with reason that particles of earth which contained tetanus-bacilli, and which were adherent to the stone, were detached by the unfortunate attempts at extraction, and thus got into the blood-current.

Zimmermann.

24. In all the cases reported by Hovver the malformation was limited to the soft parts of the ear, and there was closure of the meatus. In four of the cases, an operation was done to render the canal pervious, but in each instance it closed again.

Swan M. Burnett.

25. Thorner has found as a result of piercing the lobules of the ear the following morbid conditions: erysipelas of the auricle and face, cleft lobule, eczema of the auricle, fibroma, fibro-chondroma, and keloids of the auricle. Swan M. Burnett.

MIDDLE EAR.

26. **Hartmann, A.** Middle-ear inflammation in infants. *Deutsch. med. Wochenschr.*, No. 26, 1894.

27. **Asher, L.** Upon middle-ear inflammation after resection of the trigeminus. In the *Beiträge z. klin. Chirurgie*, by Bruns, Ganz, and others.

28. **Lannois.** Otitic origin of a certain number of cases of facial paralysis "a frigore." *Sem. médicale*, Aug., 1894.

29. **Zaufal, E.** Actinomycosis of the middle ear. Actinomycotic abscess in the vicinity of the mastoid process. *Prag. med. Wochenschr.*, July, 1894.

30. **Gomperz, B.** Upon the development and the present status of the question of the excision of the drum-membrane and ossicles. *Monatschr. f. Ohrenheilk.*, No. 12, 1892; Nos. 1–4, 1893.

31. **Moure.** Upon the extraction of the ossicles in otorrhœa. *Rev. de laryngol.*, April 15, 1894 (supplement).

32. **Forselles, A. af.** Contribution to the subject of the operative treatment of chronic purulent inflammation of the middle ear. *Arch. f. Ohrenheilk.*, vol. xxxiv., p. 145.

33. **Luc.** Contribution to the question of opening freely the cavities of the middle ear, as a means of curing certain rebellious cases of otorrhœa. *Arch. intern. de laryngol.*, vol. vii., part 3.

34. **Bacon, Gorham.** The treatment of chronic suppurative otitis media. *New York Eye and Ear Infirmary Reports*, Jan., 1894.

35. **Harris, Thos. J.** Otitis media suppurativa chronica; removal of malleus. Intermittent fever simulating localized meningitis. *Manhattan Eye and Ear Hospital Reports*, Jan., 1894.

36. **Burnett, C. H.** The surgical treatment of chronic tympanic vertigo, often miscalled Ménière's disease. *Trans. of Amer. Otol. Soc.*, 1893.

37. **Burnett, C. H.** Three cases of chronic tinnitus aurium and tympanic vertigo, relieved by removal of the stapes. *Med. News*, April 28, 1894.

38. **Bacon, Gorham.** Middle-ear operations. *New York Med. Journ.*, April 14, 1894.

39. **Jack, F. L.** Further observations on the removal of the stapes. *Trans. of Amer. Otol. Soc.*, 1893.

40. Blake, C. J. Stapedectomy and other middle-ear operations. *Trans. of Amer. Otol. Soc.*, 1893.

41. Burnett, C. H. Persistent mobility of the stapes in some cases of chronic catarrhal deafness. *Annals of Ophthal. and Otol.*, July, 1894.

42. Seiss, R. W. The treatment of tinnitus in aural sclerosis. *Annals of Ophth. and Otol.*, Jan., 1894.

43. Reinhard. Otitic cholesteatoma. *Jubilee Book of the Düsseldorf Physicians*, Wiesbaden, 1894.

44. Lange, V. (Copenhagen). Some clinical remarks upon lesions of the mastoid process resulting from acute suppuration of the middle ear. *Arch. f. klin. Chirurgie*, vol. xlvii.

45. Moll (Arnheim). Trephining of the mastoid apophysis. Reprint from *Rev. de laryngol., de rhinol. et d'otol.*, 1894.

46. Maurel. Trephining of the mastoid apophysis. Secondary union of the wound. *Rev. de laryngol. et d'otol.*, 94, 1892.

47. Vulpius, Walter. Stacke's radical operation for obstinate chronic otorrhœa. *N. Y. Med. Record*, June 16, 1894.

48. Buck, A. H. The strongly counter-irritant effects of the usual mastoid operation. *Trans. of Amer. Otol. Soc.*, 1893.

49. Von Beck. Contributions to the pathology and surgery of the brain. *Beit. z. klin. Chirurgie*, vol. xii., No. 1.

50. Butler. Acute inflammation of the middle ear following influenza. *Canadian Practitioner*, March, 1894.

51. Sutphen, T. Y. Autopsies in two cases of complicated middle-ear disease. *Trans. of Amer. Otol. Soc.*, 1893.

52. Knapp, H. Two cases of ear disease with brain symptoms. Mastoid operations in both. Recovery in one, death in the other. *Trans. of Amer. Otol. Soc.*, 1893.

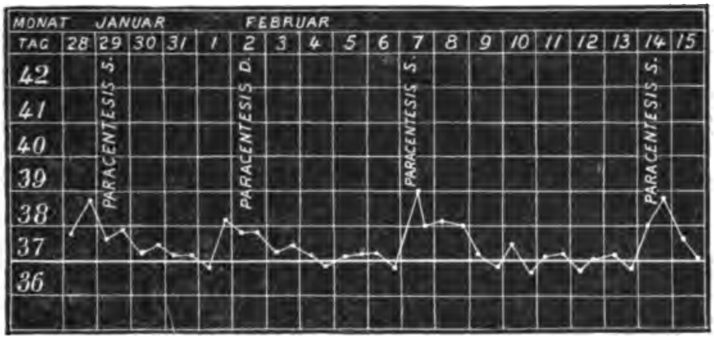
53. Pooley, T. R. A contribution to the brain surgery of ear disease. *Trans. of Amer. Otol. Soc.*, 1893.

54. Gruening, E. A case of septic thrombosis of the lateral sinus, with autopsy. *Trans. of Amer. Otol. Soc.*, 1893.

55. Burnett, C. H. A case of otitic brain abscess. Operation. Recovery. *Annals of Ophth. and Otol.*, April, 1894.

26. Hartmann examined in Koch's Institute for Infectious Diseases forty-seven infants who had been taken in for various affections with regard to the condition of the ear, and found that thirty-seven of them were suffering from otitis media. The

author was convinced from his examinations that we should not be discouraged by the statements in otological literature in regard to the horizontal position of the drum-membrane in the new-born, the great development of the epidermic layers over the drum-membrane, and the deficient lumen in the inner segment of the auditory canal. He always succeeded in getting, even in children a few days old, a view of the drum-membrane resembling that obtained in adults. A very good illumination is requisite for this examination, sunlight reflected by a plane mirror being usually employed. The work of cleaning out the canal is often very tedious. The certainty with which the temperature is affected by paracentesis of the drum-membrane is shown by the following temperature curve.



The case was that of a child affected with broncho-pneumonia, in whom paracentesis was done five times, with the result each time that the temperature fell to normal after the paracentesis. The final results are found in the report of the meeting of the German Otological Society.

27. A case of neuroparalytic otitis analogous to the keratitis which sets in after section of the trigeminus has not been so far observed clinically, so that the case described and analyzed by Asher is the first of its kind.

In a woman suffering from a follicular pharyngitis with muco-purulent secretion, a violent typical exudative otitis media set in upon the right side four weeks after an intracranial resection of the second and third branches of the right trigeminus. The author concludes that the disturbances of sensibility occurring in the auditory canal, drum-membrane, and probably the drum-cavity itself, and the vaso-motor disturbances, which gave rise to a swelling of the whole right half of the face, as well as to the œdema of the drum-membrane and middle ear, were caused by the resection of the trigeminus, and supplied the conditions requisite for the production of an infection of the middle ear from the naso-pharyngeal space. The scanty literature is fully reviewed, and the case itself is illustrated by means of critical remarks.

28. The etiology of peripheral facial paralysis, which is very frequently obscure, is often found in an otitis media that has been overlooked ; the latter leading to a swelling of the neurilemma of the facial nerve, especially in cases in which fissures are present in the facial canal. LANNOIS has observed several interesting cases having this etiology ; they are characterized by fever, general symptoms, and in half of the cases by earache and disturbances of hearing. Hence in peripheral facial paralysis the ear ought always to be examined, since by proper treatment of the latter the prognosis may be essentially improved.

29. ZAUFAL did a chiselling of the mastoid in a case which he regarded as an insidious acute otitis media without perforation of the drum-membrane, and which was complicated with deep abscesses in the throat and neck. Right below the linea temporalis he opened into quite a large pneumatic cell. In the midst of the granulation-tissue which filled this cell there was a green nodule of the size of a millet-seed. This and the granulation-tissue were removed with the sharp spoon, the wound was deepened, and at the same time the posterior wall of the canal was removed, until an opening was made into the posterior portion of the antrum. The latter was filled with granulations, between which, too, was found a group of round green granules. The actinomycotic nature of the process was made perfectly certain by the microscopical examination of these bodies. Zaufal assumes that the process occurred primarily in the tympanum, and, starting from this point, had passed through the incisura mastoidea, and thus induced the deep abscess of the neck. As regards the way by which the infection was transmitted, Zaufal, inasmuch as nothing was discovered to account for it at the ordinary avenues of entry, considers it both possible and probable that infection had occurred through the medium of a foreign body which had perforated the wall of the pharynx or mouth, and had made its way between the deep muscles of the throat and neck.

In an addendum to the original article Zaufal says that the patient had died suddenly from rupture of the vertebral artery.

He also states that a case of actinomycotic disease of the ear had been already described by Majocchi in the *Riforma med.* for 1892. POLLAK.

30. GOMPERZ treats of his theme exhaustively, making at the same time the most thorough use of all the literature upon the subject. As regards the indications for excising the ossicles, he remarks that this particular operation is not justifiable in cases of suppuration with quite large reniform or heart-shaped perforations, or cases of destruction of the drum-membrane extending as far as the antero-superior margin and combined with an apparent or perspective shortening of the malleus due to its lying close against the promontory, or finally in cases of total perforation, since cases of this sort get well without any operation. The operation should be performed, and very speedily too, in order to prevent the development of meningitis and cerebral abscess, in cases of inflammation of the tympanum and mastoid, in which, after chiselling of the latter, symptoms like vertigo, nausea, vomiting, and headache persist. Gomperz has done good service in showing, by a great array of cases, that curative results which far surpass those got by otologists who do radical operations as a matter of principle are obtained by simple conservative treatment (irrigation with the tympanic cannula and insufflations of boric acid through the latter into the attic). Moreover, the conservative treatment usually affords excellent results as regards the maintenance and improvement of the function of hearing. It should be tried first in all cases in which there are no serious symptoms calling for the speedy performance of an operation for laying open the attic and removing the ossicles. A cure is possible even in circumscribed caries of the malleus and incus. KILLIAN.

31. MOURE, upon the basis of two histories of cases which are exhaustively described, speaks regarding the significance of the extraction of the malleus or of the malleus and incus together for the cure of chronic suppuration of the middle ear. He operates under cocaine anæsthesia or in nervous patients under narcosis with chloroform or ethyl bromide. He operates: (*a*) in case of caries of the ossicles; (*b*) when the ossicles are sound, but the suppuration cannot be arrested in other ways, and there is a prospect of affording a free exit to the pus by means of the operation. He gives the operation also the credit of effecting a diminution or abolition of the tinnitus and frequently an improvement of hearing. It is rare that the latter is diminished. The author

opposes extraction of the stapes on account of the alarming character of the reaction and the danger of producing infection of the labyrinth. ZARNIKO.

32. FORSELLES, in chiselling of the mastoid, tried to accelerate the process of healing by using, two days after operation, Thiersch's skin-flaps, which then were not interfered with by hemorrhage. Afterwards he tried to secure a more rapid covering in of the wound by cutting out a large flap from the skin over the mastoid process and introducing this flap into the hole in the bone. In this way it was possible to cover nearly the whole posterior wall of the hole with healthy skin. Forselles recommends further experiments with skin-flaps taken from the mastoid region, combined with a flap fashioned out of the skin of the auditory canal by means of two parallel incisions. RUMLER.

33. LUC says that in those cases of otorrhœa in which we have first employed a careful local treatment and then removed the ossicles, but which still run on for months, we ought not to delay opening the attic and antrum. There are certain symptoms which specially oppose delay in operating. Such are : The presence of fungosities in the attic as determined by the sound, or of a fistula in the upper wall of the bony canal, or irrepressible, recurrent polypoid growths in the region of the aditus ; or, lastly and chiefly, the persistence of fetor at the fundus of the ear, even when the discharge has abated and irrigations are made through the Eustachian tubes or with Hartmann's cannulæ. The only mishap that the author has to complain of was in Case IV. where there was a complete facial paralysis. This, however, was unavoidable on account of the very great extent to which it was necessary to carry the operation if the prospect of obtaining a cure by the latter means was not going to be given up altogether.

34. During the year BACON saw 234 patients affected with chronic suppuration of the middle ear, of whom 131 were men and 103 women. Large polypi were found in 24 cases. The most frequent causes were colds, scarlet fever, diphtheria, whooping cough, measles, teething, and adenoids. The usual treatment in the simple, uncomplicated cases was syringing with warm water and instillations of drops of zinc sulphate and boric acid. He prefers this to the insufflation of powders for use by the patient. When the attic is involved he uses for cleansing purposes and to apply medication the apparatus devised by Dr. J. Hewett. The treatment of the nose and pharynx and constitutional means are

strongly insisted on. One case of removal of malleus and incus is reported. SWAN M. BURNETT.

35. HARRIS's case was a man fifty years old, who was suffering from chronic suppurative otitis media on the right side, which had existed for three years. Large perforation in anterior segment of *Mt.* Carious bone was suspected and the malleus was removed. No reaction, and patient discharged at the end of three days. Ten days after he returned with a temperature of 103°. The course of the fever suggested meningitis, but a careful survey of the symptoms rather militates against that view, and its connection with the operation on the ear. SWAN M. BURNETT.

36. BURNETT relates the histories of ten cases of chronic tympanic vertigo, which he treated surgically, and a summary of his conclusions from this experience is that the removal of the retractive force of the sound conductors upon the stapes is an efficient means of relieving tinnitus, deafness, and vertigo due to lesions of chronic catarrh in the middle ear. This can be sometimes effected by removal of the incus alone or by resecting its long process. It would seem wise, therefore, in most cases, not to sever the stapedius muscles and remove the stapes, but only remove the incus. SWAN M. BURNETT.

37. BURNETT's cases are as follows: 1. Chronic dry catarrh of long standing; *Mt.* retracted but not thickened; hearing in left nil; right, through the trumpet; tuning fork by bone in neither ear. Vertigo and excessive tinnitus. Removal of incudes. No vertigo after the operation, and tuning fork heard by bone in both ears, and some improvement in hearing in right ear. 2. A case of "traumatic catarrh" in the right ear caused by a fall, with resulting vertigo and tinnitus and deafness; left ear normal. Right incus removed, with an improvement in the tinnitus and head symptoms. 3. Also a case of traumatic origin. Total deafness; tuning fork on vertex not heard on that side; dizziness and tinnitus. *Mt.* normal in appearance. Incus removed. Tinnitus better, dizziness gone, and some improvement in hearing.

SWAN M. BURNETT.

38. From his experience in middle-ear operations, BACON thinks that the operation of stapedectomy is not advisable in chronic non-suppurative disease, and from excision of the drumhead and of one or more of the ossicles, he has had fairly satisfactory results in only four cases. SWAN M. BURNETT.

39. JACK has made 32 additional stapedectomies since his last

report, amounting now to 48 in all. A summary of his conclusions is that the operation is followed by the best results where, from increase of tissue, the effect of suppuration or hypertrophic inflammation, the stapes offers an obstruction to sound waves, but in chronic otitis media insidiosa, on account of the failure to extract the foot-plate, the results are not encouraging. The results of the operation are not commonly bad, but the improvement in hearing is not usually for all tones, and those of the human voice are best perceived, though the reverse is the case sometimes. He thinks failure in some instances due to hemorrhage into the labyrinth. SWAN M. BURNETT.

40. BLAKE reviews the conditions of the stapes as they exist in chronic non-suppurative disease of the middle ear, and in those conditions due to suppuration, and is inclined to think, from his experience, that in the non-suppurative form removal of the stapes is of doubtful efficacy. In 21 cases which he tabulates only 3 were benefited, and in these there were some exceptional conditions which favored the success of the operation. Under any circumstances he favors the making of an exploratory tympanotomy, which can be done without general anæsthesia, and then determining by further examinations and tests whether any interference is advisable. In the suppurative form, on the other hand, he finds loosening the base of the stapes of very decided benefit, particularly when the disease is not of very long standing. SWAN M. BURNETT.

41. In six cases of catarrhal deafness, tinnitus aurium, and tympanic vertigo, in which BURNETT performed tympanotomy and removed the incus, he found the mobility of the stapes perfect. In those cases the hearing was not improved, but the symptoms of labyrinthine pressure—tinnitus, vertigo, etc.—were. One case in illustration is given in full. SWAN M. BURNETT.

42. For the relief of tinnitus in aural sclerosis SEISS uses intratubal injections of the pure fluid albolene, and the vapor of menthol, and sometimes freezes the skin over the mastoid by means of vaporized chloride of ethyl. SWAN M. BURNETT.

43. REINHARD has operated upon twenty-six cases of cholesteatoma of the middle ear and the mastoid process in five years. After giving this record of cases, he describes with great precision the prevalent theories of the pathology of cholesteatoma, and the anatomy of the cavities in question. With regard to the treatment, he recommends that the cholesteatomatous masses be

syringed out with the tympanic cannula (the drum-membrane and malleus being removed, if necessary), or washed out by irrigations made through the Eustachian tube. In most cases, however, a radical operation is required; either Stacke's or Schwartze's, or a combination of the two, being employed according to the extent of the process. Subsequently transplantation of Thiersch's skin-flaps into the wound is performed, and the wound is kept open. As a matter of prophylaxis it is advised that suppuration in the ear be treated as early as possible, and accordingly a plea is made for the inclusion of an otological examination among the tests made by the government medical boards.

44. LANGE lays down his personal views in regard to acute inflammations of the mastoid, and their etiology, symptomatology, and treatment. As regards their *etiology*, the author believes that inflammation of the mastoid is, more often than is generally supposed, caused by the treatment used. He recalls the unscientific treatment with boric acid, which has been already condemned by Schwartze, and is of the opinion that irrigation of the inflamed tympanum through the Eustachian tube, and Politzerization may drive infectious secretions into the mastoid cells. As regards the *diagnosis*, Lange considers suppuration in the mastoid most probably present when pain upon pressure is found over the middle part of the process. He lays great stress upon the increase in volume in the bone. He says that he has found that when the course of the disease is rapid the bone enlarges (particularly in young people), so that on palpation the affected side seems "to get more under the finger" than the other. It is very important for the diagnosis of an affection of the bone that the course of the disease should have been observed from its beginning. The author devotes some special observations to the subject of Bezold's perforation. As regards the *course*, he says that the patient may in general resume his work in three weeks after the operation. In two cases, affections of the joints were observed at the same time as the ear trouble, and possibly were connected with the latter. As regards *treatment*, the author charges otologists with operating too early, too frequently, and too radically. In an operation he prefers small openings. He places the chisel perpendicular to the surface, and chisels the bone away until the pus comes; then completes the operation with a sharp spoon.

45. This is a description of a case reported by MOLL of bilateral otitis following influenza, in which inflammation of the mastoid

with a typical Bezold's perforation set in, first on the right side, and afterwards on the left. On the right side Moll had to open the mastoid cells as well as the burrowing abscess. On the left side he thought that he should rest content with opening the abscess, but after eleven days was compelled to lay open the antrum also. At the date of the report both portions had healed, and a left facial paralysis, produced by the suppuration, had almost disappeared. In conclusion the author urges that in similar cases, especially when due to influenza, there should be no delay about operating upon the abscess, and that the opening of the antrum should be performed only when a cure had not been obtained by the former means. ZARNIKO.

46. MAUREL, upon the basis of a case observed in Gruber's clinic of acute suppuration of the mastoid produced by irrigation of the nose, recommends that such cases be treated by operation with the application of a secondary suture, it being premised that when the latter is done there is no collection of pus remaining in the vicinity. ZIMMERMANN.

47. After an historical review of the mastoid operation VULPIUS holds that the Stacke operation fulfils all expectations required for the radical cure of otorrhœa. It, however, should be performed only as a last resort. He justly claims that the transplantation of the external meatus makes the method much superior to all other methods. The operation is contra-indicated in acute cases. The technique of the operation is well described, and clearly illustrated by three diagrams. He approves of Panse's modification of the transplantation, which consists in detaching the meatus only along the posterior wall, and gives valuable advice for the management of the after-treatment. His two cases prove of great interest, especially the second one, in which the posterior part of the attic was found to have been plugged by an osteophyte extending from the short process of the incus along its entire length to the tegmen tympani, thus completely obstructing the aditus ad antrum. This condition explained the presence of a direct fistulous communication between the drum cavity and the antrum, which was made out before the operation. Two transplantations of skin from the forearms, made at the end of the third and fourth weeks respectively, greatly assisted in the epidermization of the operation cavity. A set of instruments are pictured, among which are bent chisels, angular knives, and an angular probe of the author's own device. Vulpius hopes that the trend of American otological work will

rather lead more toward the Stacke operation than to the heretofore much overrated intra-tympanic operations.

M. TOEPLITZ.

48. BUCK gives the histories of three cases in support of his position that an opening in the mastoid may serve as a counter-irritant in cases of grave affection of the brain associated with ear disease, even though there be no disease of the mastoid itself.

SWAN M. BURNETT.

49. This work of VON BECK's relates to tumors and abscesses of the brain. Of the latter three in the temporal lobe and one in the cerebellum, due to otitis, were observed in the Heidelberg clinic; they ended fatally in spite of operation. The operation consisted in every case of a preliminary opening of the mastoid, exposure of the base of the skull, and subsequent puncture or incision with the insertion of a tampon of iodoform gauze in the trephine opening or abscess cavity. In one case the abscess was not diagnosticated, in two cases it was not found, and in one case there was behind the abscess which was opened, another one which in spite of a second operation caused death through hydrocephalus internus. The other three cases died from the accompanying meningitis or pyæmia. After giving the histories of the cases the author considers upon very broad principles the anatomical channels of infection, and then Von Bergmann's table of abscess-symptoms. Of the otitic abscesses only one showed marked local symptoms. In this there were produced by pressure of the abscess upon the centres in the parietal and occipital convolutions, clonic contractions and enfeeblement of the extremities upon the opposite side, and cortical psycho-optic aphasia. The cerebellar abscess was complicated with unilateral bulbar paralysis and destruction of the first cervical vertebra. The difficulties in making the diagnosis between abscess on the one hand and meningitis, extra dural abscess, embolism, and apoplexy on the other, are pointed out in the following pages. To justify his statement that operation is the only treatment possible in these cases, the author collects from literature 36 cases of otitic abscesses that were operated upon, including 29 in the temporal lobe, of which 17 were cured. [Körner's statistics give 55 operations for abscess, with 29 cures.]

ZIMMERMANN.

50. BUTLER points out that inflammations of the middle ear, following influenza, are characterized by the suddenness and violence of their onset, and by the greater tendency of the exudation

to become purulent. He considers gentle and soothing treatment the key to the situation. U. PRITCHARD.

51. In SUTPHEN'S first case there was extensive necrosis of the temporal bone, following middle ear disease, and on the autopsy a large abscess was found in the cerebellum, which was directly connected with the mastoid, and several other smaller abscesses on the inferior surface of the cerebellum. There were also general pyæmia and metastatic abscesses in the lungs, but no general meningitis. In the second case there was a meningitis, following acute middle-ear disease, not associated with mastoid trouble, as the autopsy showed. The right lateral sinus contained a large softened clot, which communicated with the meningeal cavity. No abscess in the brain, but the entire meningeal surface of the cerebellum was bathed in pus. SWAN M. BURNETT.

52. In KNAPP'S first case, a very feeble and anæmic child was operated on by chiselling the mastoid for long-continued purulent ear disease. The temporal bone was extensively necrosed, and a large part of it was removed. About a month after the operation, while the wound was being dressed, the probing was followed by a flow of dark blood, which, however, was not alarming at the time. Some hours after, the child died apparently from a continuation of the hemorrhage. The second case was one of chronic middle-ear suppuration with grave brain and lung complications. The mastoid was opened to a depth of two centimetres and a breadth of three centimetres. The bone was rather compact and no pus or granulations were found. There was, however, a sudden gush of dark blood following a blow on the chisel, which the author believed to be due to an opening in the lateral sinus. Previous to the operation there were the evidences of pyæmia, and these continued for many days after, improvement beginning on the ninth day and going on to recovery. On the fifth day after the operation the ear which had ceased discharging began to run. This soon ceased, and hearing became almost normal.

SWAN M. BURNETT.

53. POOLEY'S patient was a young man of twenty-nine years, who suffered from an acute otitis following *la grippe* and who also had the secondary symptoms of syphilis. Under treatment the symptoms subsided but did not entirely disappear, and at the end of a month distinct mastoid disease was apparent for which he submitted to an operation. There was much diseased bone found and a quantity of fetid pus liberated. All dis-

eased bone was removed. He took the anæsthetic (ether) badly and was with difficulty saved from collapse. For eight days the progress was a favorable one, but at the end of that time cerebral symptoms returned—increased temperature, nausea, and headache. At no time was an optic neuritis evident. Dr. Abbe was called in consultation, and after careful watching of the case, when the man was already in a state of coma, an opening was made over the temporo-sphenoidal lobe and a hypodermic needle thrust into the brain in various directions, but no pus was found. The wound was then enlarged and the lateral sinus examined and found healthy. He had just prior to the operation paralysis of the external rectus of the left side and some difficulty in moving the left arm. He was given at different times large doses of the iodides and mercurial inunctions. No autopsy was allowed, but Pooley thinks there was a deep abscess in the brain. SWAN M. BURNETT.

54. The case reported by GRUENING is that of a women thirty-eight years old, who for several years has had a discharge from the left ear with severe headache at times. The mastoid was opened. Cortex extensively carious and covered with granulations. The cavity was cleaned out with a sharp spoon and rongeur, and the lateral sinus was exposed. It seemed healthy, and did not pulsate. A few days thereafter there was a rise in temperature, and septic pneumonia developed from which the patient died. On autopsy no disease of the brain was found, but the lateral sinus contained a cheesy fetid clot which adhered to the inner roughened wall of the sinus. SWAN M. BURNETT.

55. BURNETT's case was a girl of sixteen, who was taken into the hospital suffering apparently from an attack of *la grippe*, with pain in and around the right ear. The pain ceased rather suddenly, but soon she began to vomit and had a violent frontal headache, principally over the left eye. There was purulent discharge from both ears of long standing; temperature ranged from 101.2° to 103°, and then fell below normal, reaching 96°. A cerebral abscess was diagnosticated, but it was not possible to determine its location till after a convulsion, following which there was extreme flexion of the left arm over the chest and increased knee-jerk and some ankle-clonus on the left side. Right pupil extremely dilated and immobile; Cheyne-Stokes respiration. The skull was trephined by Dr. De Forrest Willard. He began by trying to open the mastoid and antrum cavities (without an anæsthetic as the

patient was comatose), but as this was tedious and time was precious he opened the cranial wall one and a fourth inches behind the external auditory meatus and the same distance above Reid's base line. The abscess was found near the surface, in the substance of the temporo-sphenoidal lobe, and slightly above the opening in the skull. There was some hemorrhage from the lateral sinus and a discharge of three and one half ounces of extremely fetid pus. The right pupil contracted immediately upon the evacuation of the abscess, but dilated again when the cavity was washed out with a warm boric acid solution. The patient made a good recovery and there is not any evidence to show that the pus in the brain was due to any direct connection with the ear cavities. Burnett thinks it was metastatic.

SWAN M. BURNETT.

INTERNAL EAR.

56. ROHRER (Zürich). Upon the perception of higher and deeper tones in the affections of the labyrinth and the auditory nerve. *Wien. med. Wochenschr.*, Nos. 8, 9, 10, 1894.

57. CARTAZ, A. Two cases of hysterical deafness. *Rev. de laryngol. et d'otol.*, 11, 1894.

58. THIEM. Upon traumatic disease of the labyrinth. *Monatsschrift f. Unfallheilk.*, vol. i.

59. MACKENZIE, STEPHEN. The nature, diagnosis, prognosis, and treatment of aural vertigo. *Brit. Med. Jour.*, May 5, 1894.

60. DALBY, Sir WILLIAM. A note on auditory vertigo. *Ib.*, May 12, 1894.

61. BONNIER, P. The vertigo of Bright's disease. *Annales de méd.*, Nos. 41, 42, 1893.

62. LEDERMANN, M. D. A case of labyrinthine disease following typhoid fever. Improvement after sixteen years' deafness. *Manhattan Eye and Ear Hospital Reports*, Jan., 1894.

63. DENCH, E. B. Affections of the sound-perceiving apparatus. *New York Eye and Ear Infirmary Reports*, Jan., 1894.

64. HELFREICH, C. H. A case of otitis interna traumatica. *Jour. of Ophth., Otol., and Laryngol.*, Jan., 1894.

56. ROHRER gives a statistical report upon ninety cases of diseases of the labyrinth and auditory nerve, in which the tests for hearing were made with a successive series of tuning-forks.

with closed organ-pipes, and with König's rods. He used for this purpose besides the *a^1*, *c^1*, and *A* forks a new deep *C* tuning-fork of 64 vibrations, a higher *c* fork of 1024 vibrations, and Appun's large fork of 12 to 36 vibrations; also closed organ-pipes ranging from a^2 to a^3 and from a^3 to f^5. The results were as follows: Torpor of the auditory nerve affects the male and female sex with equal frequency, but the left ear shows a markedly greater tendency to be diseased than does the right. The application of Weber's test showed that the tuning-fork was more frequently heard louder in the better-hearing ear; Rinné test was in the vast majority of cases positive; Gellé's *pressions centripètes* gave in 36 per cent. of the tests for air- and bone-conduction a positive, and in 64 per cent. a negative result. The appreciation of high tones was in all cases perfectly retained, but the perception time for bone-conduction was greatly reduced. Vertiginous symptoms and sensations of oppression were but slightly marked, and the subjective noises were inconsiderable; when present were of an intermediate character, *i. e.*, were roaring or singing sounds of medium pitch. POLLAK.

57. One of CARTAZ's cases, a girl sixteen years of age and not particularly nervous, was rendered incapable, by a blow upon the left ear, of uttering a single sound or of hearing the voice or the watch. Intelligence was retained and she was able to understand writing. There was anæsthesia of the left side including the left ear, which was otherwise normal. An immediate and permanent cure was effected by the galvanic current. The second case was that of a very nervous lady who was at the end of her fortieth year. As the result of strong excitement she had an hysterical attack, and, perhaps directly after this but certainly when she woke up the following morning, became completely blind and deaf. The sensory organs showed no alteration, but there was a general hyperæsthesia set up by the slightest stimuli. The application of a metal rod, which happened to be present in the room, affected a restoration of hearing for the watch and voice, and a complete cure of the hyperæsthesia also was accomplished by the application of two strong magnets. ZIMMERMANN.

58. In THIEM's case a fall from a height of one story upon the left ear was followed by tinnitus in the latter, deafness, and left-sided vertigo, especially upon movement. In Weber's test tuning-fork heard only upon the right side; on the left side, Rinné's test, positive. Diminution of hearing for watch and

speech. Loss of power to appreciate tones produced by the medium tuning-forks. In testing the hearing for speech, Thiem recommends his speaking funnel provided with two rubber tubes. No statement is made as to whether changes in the drum-membrane or temporal bone could be observed. ZIMMERMANN.

59. MACKENZIE's paper is interesting as recording the views of an able physician rather than a specialist. The various theories as to the seat and nature of the lesion are carefully enumerated, and valuable hints as to prognosis and treatment are given. Stress is laid upon the importance of carefully watching the pulse in the interparoxysmal stage with a view to the reduction of pressure by a suitable purge, if need be. U. PRITCHARD.

60. DALBY's paper is in the main confirmatory of Mackenzie's. It suggests that in some cases the vertiginous attacks are symptomatic of impending apoplexy and that these are the cases relieved by purgation. U. PRITCHARD.

61. According to BONNIER, vertigo may depend upon affections of the larynx, cerebrum, cerebellum, or medulla, and upon disorders of the eyes or stomach, but is most frequently occasioned by affections of the labyrinth. Like Bowman's capsule, the labyrinth forms a locus minoris resistentiæ. The mechanism of the production of vertigo may vary. Either the terminal expansion of the nerve is irritated by toxic products which accumulate in the labyrinthine fluid and then excite the complex of symptoms called by Gellé labyrinthismus; or coagula of albumin are formed which lead to obstruction of the endolymphatic passages, and consequently to abolition of the valvular action of the foot-plate of the stapes; or intra-labyrinthine hemorrhages are produced, which then give rise to the aploplectiform vertiginous attacks of Ménière. Except in this last form, the prognosis is favorable. A simple milk-diet may effect a rapid cure.

ZIMMERMANN.

62. LEDERMANN's patient, a girl, when three years old had an attack of what her physician said was typhoid fever. On recovery she was practically deaf, and when examined by Ledermann sixteen years later could hear nothing on the left side, and cracking of finger-nails at 2 inches on the right. She was put on large doses of iodide of potassium. At the end of five months she had hearing: R, finger-nails at 5 in.; W., 2 in.; L, finger-nails, 1 inch; W. contact, and could hear conversation a little louder than ordinary. SWAN M. BURNETT.

63. A mere abstract cannot do the carefully prepared paper of DENCH justice. Within the last two years he has seen 35 cases of what he considers pure nerve deafness, classified from causes as follows: hyperæsthesia (reflex), 4; labyrinthine hemorrhage, 4; syphilis, 5; scarlet-fever, 2; senility, 5; meningitis, 2; mumps, 1; measles, 1; labyrinthine congestion, 2; alcohol and tobacco, 2; neurasthenia, 6. In diagnosis he determines the upper limit, the lower limit, and the absolute bone-conduction. For the greater number of cases he uses a series of Hartmann tuning-forks, ranging from 128 V. S. to 2048 V. S. In exceptional cases he uses a continuous series of higher notes. We should expect these lesions of the perceptive apparatus consecutive to middle-ear changes to affect principally the higher notes, since that portion of the cochlea which perceives these lies nearest the middle ear. For testing the very highest limit he uses a series of forks or whistles going as high as 32,500 V. S., and for the lowest, a fork of 64. He has made a useful modification of the Galton whistle for use in the testing of the higher limits. He has used electricity to determine the irritability of the nerves in obscure cases, and he has found that the nerve will respond to a current of from 12 to 16 milliamperes, where pain does not prevent its use. SWAN M. BURNETT.

64. In the case reported by HELFREICH, a girl of five fell on her head while "skipping rope." This was followed by fever and difficulty of speech. She was found eight days after the accident to be perfectly deaf and apparently suffering from aphasia, and had vertigo. The deafness remains, though her general health is restored. SWAN M. BURNETT.

NOSE AND NASO-PHARYNX.

65. PAWLOWSKY. Upon the treatment of rhinoscleroma with rhinosclerin. *Deutsch. med. Wochenschr.*, No. 14, 1894.

66. MOURE, G. J. Upon a case of spontaneously developed rhinoliths. *Monatsschr. f. Ohrenheilk.*, Nos. 8, 9, 1894.

67. DIDSBURG, G. Contribution to the study of rhinoliths. *Thesis*, Paris, 1894.

68. HERZFELD, J. Rhinological communications. [Removal of catheter from naso-pharynx. Erysipelas of nasal septum]. *Monatsschr. f. Ohrenheilk.*, No. 9, 1893.

69. KEIPER, GEO. F. A cherry-stone in the nose. Rhinolith. *New York Med. Journ.*, Jan. 6, 1894.

70. WAKEFIELD, W. H. Nasal calculus, with report of a case. *Charlotte Med. Journ.*, Feb., 1894.

71. KJELMANN, F. Epileptiform attacks produced by changes in the nasal cavities. *Berl. klin. Wochenschr.*, No. 13, 1894.

72. ZIEM, C. Relations between affections of the eyes and the nose. *Monatsschr. f. Ohrenheilk.*, Nos. 8, 9, 1893.

73. LEWIS, FRED. D. Nasal reflexes. *Journ. of Ophthalmol., Otol., and Laryngol.*, April, 1894.

74. LEDERMANN, M. D. Asthma consequent to nasal irritation. *New York Polyclinic* May, 1894.

75. ELLISON, S. K. Operation for depressed nose. *Lancet*, Feb. 17, 1894.

76. BOUFFÉ. Upon nasal stenosis and its treatment by simple and rapidly progressive dilatation with bougies. *Rev. internat. d'otol.*, Nov., 1893.

77. BERENS, T. PASSMORE. Cork splints for deflections of the nasal septum. *Manhattan Eye and Ear Hospital Reports*, No. 1, 1894.

78. SCHEPPEGRELL, WM. Congenital occlusion of the posterior nares. *Annals of Ophthalm. and Otol.*, vol. iii., April, 1894.

79. LACOARRET. Hæmatoma of the nasal septum. *Rev. de larnyngol. et d'otol.*, No. 10, 1894.

80. GARNAULT. Vibratory and electric massage of the mucous membranes; its technique, and its results in the treatment of the diseases of the nose, throat, ear, and pharynx. With preface by Michael Braun. Paris, 1894.

81. BOGDAN, ALADAR. Contributions to the subject of internal massage of the mucous membranes. *Wien. med. Presse*, No. 2, 1894.

82. VULPIUS, W. Massage of the turbinated bodies. *Arch. f. Ohrenheilk.*, vol. xxxvi., p. 207.

83. BISHOP, SETH L. A new and successful treatment of hay-fever. The views of the profession. *Med. News*, February 24, 1894.

84. WRIGHT, JONATHAN. Asepsis and antisepsis in the nose and throat. *Annals of Ophthalm. and Otol.*, vol. iii., April, 1894.

85. MEYERSON, S. Upon the formation of bone-cysts in the nose, with a case of empyematous bone-cyst. *Monatsschr. f. Ohrenheilk.*, No. 7, 1893.

86. DREYFUS, R. Contribution to the clinical history of suppurations in the nose. Suppurative periostitis of the turbinated bone due to caries of the teeth. *Wien. med. Presse*, No. 10, 1894.

87. HAJEK, M. Affections of the ethmoid bone and their significance. *Wien. internat. klin. Rundschau*, No. 19, 1894.

88. BURGER, H. Upon the diagnosis of suppuration of the maxillary antrum. *Monatsschr. f. Ohrenheilk.*, No. 11, 1893.

89. LUC. Contributions to the study of suppurations of the frontal sinus. *Arch. internat. de laryngol.*, etc., July and Aug., 1894, and *Sem. méd.*, No. 39, 1894.

90. EULENSTEIN, H. Remarkable case of a foreign body in the maxillary antrum, with observations regarding the treatment of so-called empyema of the latter. *Monatsschr. f. Ohrenheilk.*, No. 7, 1893.

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92. WINKLER, E. Should the therapeutic procedures, which may be regarded as justifiable in the treatment of suppuration of the maxillary antrum, be also employed in the same disease of the frontal sinus? *Ib.*, Nos. 2, 3, 1894.

93. ADAMS, A. E., and NICHOLS, J. E. H. Empyema of the frontal sinus with unusual conditions. Death. Autopsy. *Manhattan Eye and Ear Hospital Reports*, No. 1, 1894.

94. ONODI, A. Interesting case of sarcoma of the nasal fossa. *Rev. de laryngol. et d'otol.*, No. 10, 1894.

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96. ANNANDALE, T. On the removal of fibrous or nasopharyngeal polypi. *Lancet*, Feb. 17, 1894.

97. CHIARI, O. Upon the operation for adenoid vegetations. *Wien. Allgemein. med. Zeitung.*, No. 14, 1894.

98. MCKERNON, J. F. Report of a case of torticollis following adenotomy. *Manhattan Eye and Ear Hospital Reports*, No. 1, 1894.

99. KNIGHT, C. H. A case of torticollis following removal of adenoids of the naso-pharynx. Remarks on nasal reflexes. *Annals of Ophthal. and Otol.*, vol. iii., April, 1894.

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101. PHILIPPS, WENDELL C. A case of extensive adhesions between both Eustachian tubes and the vault of the pharynx, the result of adenoid growths. *Manhattan Eye and Ear Hospital Reports*, vol. i., 1894.

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103. LEDERMANN, M. D. Alarming secondary hemorrhage following removal of hypertrophic tonsils with the galvano-cautery snare. *Annals of Ophthalm. and Otol.*, vol. iii., April, 1894.

104. DE SANTI, PHILIP R. W. Hemorrhage following tonsillotomy; its causes and appropriate treatment. *Lancet*, Jan. 13, 1894.

105. ROOS. Upon rheumatic angina. *Berl. klin. Wochenschr.*, No. 25, 1894.

106. MAYER, EMIL. The treatment of follicular pharyngitis with a report of twenty cases operated upon by the pharyngeal curette. *New York Eye and Ear Infirmary Reports*, vol. ii., p. 1, Jan., 1894.

107. BRICKLEY, E. W. Lupus vulgaris. *Journ. of Ophthalmol., Otol., and Laryngol.*, April, 1894.

108. ASCH, MORRIS J. Endothelioma of the tonsil. *New York Eye and Ear Infirmary Reports*, vol. ii., p. 1, Jan., 1894.

109. CLEVELAND, A. H. Epithelioma of the soft palate. *Med. News*, April 28, 1894.

65. After making some preliminary researches, both in the laboratory and upon animals, PAWLOWSKY has gone a step further and has treated patients affected with rhinoscleroma by injecting into them subcutaneously a fluid of an extremely complicated composition. This latter contains the toxines of the bacilli of rhinoscleroma in the form of an aqueous-alcoholic glycerin extract. Afterwards the author employed a fluid consisting of the inspissated cold filtrates, together with the watery glycerin extract made from the bacilli, without the alcoholic and ethereal extracts,

and gave this fluid the name of rhinosclerin. The patients reacted to these injections in much the same way as do those who are treated with Koch's tuberculin, *i. e.*, they had chills, rise of temperature, acceleration of pulse and respiration, and especially severe pain in the affected parts of the face. The result of this method of treatment was that "under the influence of rhinosclerin the progressive development of this horrible and incurable disease had in the patients thus treated made no advance for almost two years, and that hence the neighboring tissues must be regarded as having been rendered immune." NOLTENIUS.

66. The calculus in **MOURE**'s case was most minutely examined, both chemically and histologically, by Sabrazès. It consisted of a mixture of bloody detritus and rings of calcium and magnesium phosphate. In the detritus were found granular and fibrillated fibrin, blood-pigment corpuscles, hæmatoidin crystals, and numerous colonies of bacteria. All the canals which traversed the calculus and even the fissures between the successive laminæ of phosphates contained micro-organisms, by which Moure believes the deposition of the calcium salts was caused. KILLIAN.

67. **DIDSBURG** has observed one case of rhinoliths himself. He distinguishes rhinoliths into false and true, according as they do or do not contain a nucleus consisting of a foreign body upon which the lime salts are deposited. Reasoning from a pathological standpoint, the author accepts the theory of a primary affection of the mucous membrane, which leads to the successive deposition of lime salts. In all the author has examined four cases, two of which, not before published, occurred in Luc's practice and his own.

68. **HERZFELD**, in order to remove from the naso-pharynx a hard rubber tube, 4.5 *cm* long and 0.5 *cm* thick, had to employ narcosis with a dependent position of the head. He also mentions a case of erysipelas in the mucous membrane of the septum, resulting in the formation of an abscess on both sides of the latter. There was no history of preceding injury. KILLIAN.

69. The rhinolith found by **KEIPER** in a man, aged 35, was crushed with a heavy duckbill forceps; some fragments were brought out anteriorly, the remainder was shoved into the pharynx and coughed out through the mouth. It was ¾ inch long, ½ inch wide, nearly ½ inch thick, and contained in its centre a cherry-stone, which must have been placed into the nose in childhood.

M. TOEPLITZ.

70. **Wakefield** reports the case of a man, aged thirty-three, who exhibited purulent discharge from the left nostril and the formation of large polypi, which were expelled every four weeks. The nucleus of a foreign body proved to be a cherry-stone lodging in the nose since early childhood, where its retention was facilitated by a deepening in the floor. M. Toeplitz.

71. **Kjelmann** reports the following cases: 1. A twelve-year-old boy, otherwise healthy and with no family tendency to nervous disease, became affected in 1886 with tonic spasms, sometimes with, sometimes without, disturbance of consciousness. These gradually became more frequent, increased in violence, and from being present at first only at night afterwards began to occur in daytime also. In December, 1888, the inferior turbinated bodies, upon which there was a soft hypertrophy of moderate size, was cauterized. The patient remained well up to August, 1889, then a relapse occurred in connection with an acute coryza. Then, after the inferior turbinateds, which had again become greatly swollen, had been once more cauterized, the patient got well and remained so permanently—at least till 1892. Kjelmann assumes with Hack that by the swelling an irritation of the trigeminus is set up which being transmitted to the motor centres of the cerebral cortex, causes a discharge producing the spasm. 2. In the second case there were severe attacks of epilepsy with loss of consciousness, and chronic spasm. In the patient, a child of six, there was found a moderately-sized, soft, diffuse swelling of the right inferior turbinated. Here apparently the attacks could not be regarded as a reflex from irritation of trigeminus, since they persisted in spite of cauterization of the swollen turbinated, but stopped entirely as soon as the boy was broken of the habit, that he had kept up for three years, of interfering with his breathing through the nose by inserting his fingers in the latter during sleep. This case of epileptiform convulsions in all probability arose from the interference with breathing through the nose.

72. **Ziem**, upon the basis of his experience of fifteen years as both a rhinologist and ophthalmologist, gives a very interesting general view of those eye diseases that may stand in causal connection to diseases of the nose. In affections of the laryngeal passages, conjunctiva, cornea, uveal tract, optic nerve, lens, orbit, lids, and lid-muscles, and also in tenonitis and in myopia, nasal affections of the most various nature were found. Among these suppuration of the accessory cavities played a particularly great

part. In numerous cases treated in vain by ophthalmologists, Ziem has effected an improvement and a cure by treating the nose. "In ten years," he says, "no one will be able to carry on the practice of ophthalmology unless he pays careful and constant attention to diseases of the nose." KILLIAN.

73. **LEWIS**'s first case, a man, aged fifty, was cured of his neuralgic pain and headache by Adam's operation for deviation of septum and the use of cork splints for support after operation, which resulted in a small perforation of the septum from bruising. Case II., a female, aged thirty-two, was greatly relieved from asthma by removal of the anterior extremity of the middle turbinated. M. TOEPLITZ.

74. **LEDERMANN**, although believing asthma to be due to disturbance of the sympathetic nerves, thinks that its occurrence is considerably influenced by nasal irritation. He illustrates this by two cases, which were promptly cured or greatly relieved by the removal of ecchondromata of the nasal septum.

M. TOEPLITZ.

75. In this case the supporting plate for the depressed nose was made of gold, and Mr. **ELLISON** thinks that his success was largely due to the fact that he took the precaution of having the plate perforated. The patient has been wearing the plate for seven years without inconvenience. The improvement, as seen in the photographs, was most marked. U. PRITCHARD.

76. **BOUFFÉ** gives two cases (in which, however, the cause of the stenosis is not mentioned) which were cured by rapid, progressive dilatation with bougies. The duration of treatment was three months and four and a half months respectively, and examination made respectively one and two years afterward showed that the cure still persisted.

77. **BERENS** avoids the evils connected with the use of the different septal supports after Adams's operation by preparing splints of corks of the pint-bottle size, which are whittled to the shape of an almond with the point cut off, and flattened on the side that is to lie against the septum ; the opposite side, near its lower border, is slightly grooved for the reception of the inferior turbinated body. The splints are hollowed by a nasal burr, trephine, file, or red-hot metal, and coated with iodoformed collodium. Berens reports four cases operated by him or Dr. Hubbard, in which the splints were successfully used. M. TOEPLITZ.

78. **SCHEPPEGRELL**'s patient, a girl aged sixteen, had frequently

suffered from laryngitis and bronchitis, on two occasions from otitis purulenta dextra, and exhibited a marked nasal twang in the voice. The right nostril ended in a wedge-shaped funnel, "the obstruction being due to a welding together of the posterior end of the turbinals and the vomer into one bony mass." The first opening made with an electric burr and trephine was again occluded in three weeks, but the second opening, made by trephining two separate holes above and below, and removing the intervening piece of bone with the nasal saw, remained permanent.

M. TOEPLITZ.

79. LACOARRET relates a case in which, as the result of a blow from a dinner plate, fluctuant tumors covered with normal mucous membrane had formed upon both sides of the septum, and had blocked up the nose. Palpations of one produced no fluctuation in the tumor of the other side. Puncture afforded a pale, rose-colored, clear liquid. The sound did not strike any bare or thickened cartilage. Cure. The author considers the differential diagnosis, and opposes the views of Strazza, who has regarded an analogous case as one of lymphatic tumor. This latter diagnosis should have been confirmed by a precise examination of the fluid evacuated by puncture; if this had been done, it would have probably turned out, as in the case published by the author, that what was present was simply blood altered by processes of resorption. ZIMMERMANN.

80. GARNAULT in this work speaks very enthusiastically upon the results of massage. He effects this by various instruments, among others by a vibrator of his own invention, which is run by a dynamo contained in the instrument itself and which is capable of affording both axial and transverse vibrations. He has also devised a special instrument for performing massage of the drum-membrane and ossicles. He often reinforces the action of the instruments by connecting them with the pole of a galvanic or faradic battery, the other pole being connected with an indifferent spot. He regards it as absolutely essential that the vibrations produced should be absolutely uniform and regular. Their number usually varies from 350 to 400 a minute. The sound by which the massage is performed is also used as a means of making at the same time medicinal applications to the mucous membrane (*e. g.*, of corrosive sublimate, balsam of Peru, and iodo-glycerine); but such applications the author regards as simply auxiliaries to the massage treatment and not, as others have done, the essen-

tial part of it. He reports particularly favorable results in ozæna, acute coryza, chronic nasal catarrh, and reflex nasal neuroses, and in diffuse and granular chronic pharyngitis; but seems to regard it as efficacious in almost all the diseases of the nose and throat, and believes that in the acute exanthemata he can by this means prevent the development of an otitis media and that in catarrhal otitis media itself he can secure the disappearance of the exudate and in the sclerosing form the abolition of the tinnitus.

ZARNIKO.

81. **BOGDAN** recommends massage of the mucous membranes, having been himself cured under Laker's hands of a chronic pharnygeal catarrh and a tumescent catarrh of the nose by this means.

POLLAK.

82. **VULPIUS** has had no success with massage in ozæna as performed by Braun and Laker, and considers the action pretty much the same as that of Gottstein's tampon, *i. e.*, regards it as depending upon irritation of the surface of the mucous membrane. On the other hand, Vulpius used with advantage, in diffuse swellings of the mucous membrane, the sound which he has proposed and which is broad anteriorly. With this instrument he does a sort of massage accomplished by a stroking movement from before backward, and attempts in this way to empty the blood that distends the turbinated bodies into the plexus of the pharyngeal vein and at the same time to turn the lymph current in the same direction. The massage is performed at first at intervals of two days, afterwards less often. Cocaine is usually not required.

RUMLER.

83. **BISHOP** believes the prevalence of paroxysms of hay-fever during the early morning hours to be due to the excess of uric acid, the blood reaching its point of greatest alkalinity at about nine o'clock A.M. He therefore institutes anti-uric-acid treatment with mineral acids, preferring the dilute sulphuric acid and acid phosphate of sodium. He recommends also for preventive treatment small doses of salicylate of sodium, beginning forty days prior to the expected attacks, and lithia water. The last part of the valuable paper is taken up by the views of the different authorities on hay-fever. Bishop also applies the galvano-cautery, when there are positive local indications for its use.

M. TOEPLITZ.

84. **WRIGHT** says that the nose cannot be cleansed in a surgically aseptic sense on account of the intricate structure of the

nasal cavities and their accessory sinuses and that of the nasopharynx, in which pyogenic and other pathogenic bacteria are always found. The nasal mucous membrane, however, seems to possess considerable power of resistance against infection ; septicæmia after intranasal procedures is, therefore, of very rare occurrence. Notwithstanding these facts it is prudent to cleanse the nose with alkaline antiseptic washes applied anteriorly with compressed air and posteriorly with the post-nasal syringe ; the mouth and oro-pharynx are cleansed by sprays of peroxide of hydrogen (1:3) or gargles of solution of sublimate (1:5000). The number of germs is thus diminished. Wright prefers the irrigations to be subsequent rather than preliminary to operations.

M. TOEPLITZ.

85. In MEYERSON's case the cyst was as large as a pigeon's egg, filled with pus, and completely blocked up the nose, reaching to the floor of the nasal cavity. There were also empyema of the maxillary sinus and nasal polypi. KILLIAN.

86. In DREYFUS's case there was a discharge of fetid pus from the nose, and an exploratory puncture made at the anterior extremity of the inferior turbinated brought away a syringeful of pus. To determine the existence of an empyema of Highmore's antrum, Dreyfus extracted the stump of the second premolar tooth and its alveolus, and opened into the maxillary sinus, which, however, turned out to be healthy. An argument in favor of the diagnosis given in the caption was the swelling at the inner angle of the eye, combined with the marked erysipelatous swelling at the skin. A cure occurred three months later after repeated cauterizations of the inferior turbinated. POLLAK.

87. According to HAJEK's observations there is no constant condition found that will serve for the diagnosis of ethmoidal disease. With the exception of cases in which there are osseous cysts of the middle turbinated and in which rupture into the orbit with the formation of fistulæ takes place, the diagnosis is uncertain. The only constant change which Hajek has found is the presence of polypi or hypertrophies in the middle meatus. But the diagnosis of empyema of the ethmoidal cells is justified only by catheterization of the ethmoidal labyrinth—which itself is possible only after removal of the middle turbinated bone and exposure of the ethmoidal aperture—and by the increase in the flow of pus produced by this operation. The necrosing form of ethmoiditis is, according to Hajek, very rare. He further combats

the view that nasal polypi are always the result of an affection of an accessory sinus. That, on the contrary, polypi often furnish the cause for the development of such an affection, Hajek considers probable. He opposes the idea of Grünwald and Bresgen, that typical atrophic fetid rhinitis is probably always referable to disease of one of the accessory curities; his opposition being based upon the results of Zuckerkandl's autopsies and his own experience, inasmuch as after accurately examining many cases of typical ozæna he has only once succeeded in demonstrating an empyema (in this case affecting one of the maxillary sinuses). POLLAK.

88. BURGER has observed two cases in which along with an empyema of the maxillary antrum of one side there were on the back part of the nasal fossa on the other side a chronic inflammation and an accumulation of purulent debris. He explains the connection by supposing that, as the patient lay upon the healthy side at night, the pus flowed from the maxillary sinus upon the septum and along this into the other nasal fossa, which was originally healthy. Burger has, moreover, made the noteworthy observation that, in transillumination of the maxillary sinuses of healthy subjects, it was always stated that there was a sensation of light, while in the cases in which the antrum was diseased this sensation was absent on the affected side. KILLIAN.

89. LUC, as the result of several operations which have caused him to modify his previous method of operating, believes that he may now formulate the following rules. Since empyema of the maxillary sinus and the ethmoid cells may exist along with empyema of the frontal sinus, we should in disease of the latter always examine the maxillary sinus with the electric light and always follow up the opening of the frontal sinus with opening into the ethmoid cells. Exploration of the frontal sinus by means of an electric lamp inserted into the orbit has a diagnostic value only when it gives a positive result. In opening the frontal sinus we should, in order to get a really radical cure, expose its anterior wall as fully as possible : in all cases this should be followed by opening of the ethmoid cells, and at the same time a free passage into the nose should be made by means of a thick drainage-tube. The disfigurement may be reduced to a minimum by primary suture of the external wound.

90. In EULENSTEIN'S case the point of a trocar broke off during the operation of boring into the maxillary antrum through the alveolus, and got into the antrum. Four months afterwards,

having in the meantime passed the ostium maxillare, it came out of the nose, while the latter was being irrigated. KILLIAN.

91. LIEBE believes that in his case the pus had broken through to the pharynx. But probably in this case, as in one observed by the Reviewer, what was really present was a metastatic abscess in the pharynx. KILLIAN.

92. WINKLER describes the way which he adopted in order to open into the frontal sinus from the nose. A puncture made on the external aspect of the middle turbinated, he considers as admissible in only a few cases, which he particularizes; in others it is contra-indicated on account of the danger of opening into the orbit. On the other hand, he ranges himself among the warm adherents of Schaffer's method of puncturing the frontal sinus, which is performed by means of a sound 2 *mm* thick introduced on the internal aspect of the anterior extremity of the middle turbinated. Upon the basis of anatomical studies and experiments upon the cadavers, he demonstrates that this procedure is more frequently applicable than the other way, and he gives precise directions enabling one to operate by this method upon the living subject without danger. If his directions are followed, he considers this method to be as free from danger as is the simple application of a sound to any of the natural orifices. Nevertheless we are convinced that not very many others will follow him in this extraordinary way. KILLIAN.

93. ADAMS's and NICHOLS's patient, a girl æt. twenty, first noticed in 1888 some nasal obstruction, which gradually increased, with discharge and odor. Two years later, she suffered from frontal headache, and an aggravating dry cough, weakness of the eyes, and full feeling of the orbit. The eyes began to protrude and in April, 1890, an abscess developed under the right upper lid which was opened at the outer edge of the orbit, followed by another abscess, leaving a fistula and causing total blindness of the right eye after the development of corneal ulcer and leucoma. In March, 1892, abscesses developed over the left eye, leaving also a fistula but without affecting the eyesight. Dead bone could be felt through the fistulæ and also through the nose after removal of enormous masses of polypi. The patient, however, died from pneumonia before an attempt at a radical evacuation of the frontal sinuses was made. The autopsy revealed complete destruction of the orbital wall of the frontal sinuses and ethmoidal cells.

M. TOEPLITZ.

94. In **Onodi**'s case, a man fifty years of age, who had already had operations for numerous nasal polypi performed on both sides of the nose, the polypi recurred on the right side, together with suspicious granular new growths, which, upon histological examination, turned out to be round-celled sarcomata. Both were removed and their points of origin burned with the galvano-cautery. Then for two years the patient was entirely well, but afterwards there was a recurrence, and in the course of the fifth year a radical surgical operation had to be performed on account of the rapid growth of the tumor. The sarcoma, which sprang from the middle turbinated, filled the whole of that side of the nose, and with it was associated an empyema of the lachrymal sac and of the frontal, ethmoidal, and sphenoidal sinuses. The operation, made about half a year ago, was successful. ZIMMERMANN.

95. **Sendziak**, in the case of a workman, aged fifty-three, removed, through the mouth, a naso-pharyngeal tumor, using the cold snare for the purpose. The tumor, which was 6 *cm* long, 5 broad, and 2½ thick, was pale, soft, lobulated, and brain-like in appearance, and upon microscopical examination was shown to be a papilloma, into which two soft, fibromatous nodules had penetrated. KILLIAN.

96. In removing fibrous naso-pharyngeal polypi, **Annandale** advocates the use of chloroform as an anæsthetic, places the head in a dependent position, divides the soft palate in the median line, and, pulling aside the two halves, rapidly separates the tumor from its connections and twists it off with a forceps.

U. PRITCHARD.

97. **Chiari**'s treatment consists in almost every case in removing the adenoid vegetations with the cold-wire snare, introduced through the nose, controlling his operation at the same time by means of posterior rhinoscopy. POLLAK.

98. The remarkable features of **McKernon**'s case, which occurred in a girl, aged nine, consisted in the rapid growth of adenoids within seven months from a small swelling to a firm growth, extending below the soft palate, and in the occurrence of torticollis twenty hours after operation, which, however, completely disappeared in a week. M. TOEPLITZ.

99. **Knight**, after reviewing the literature on nasal reflexes, and particularly those of the naso-pharynx, discusses, on account of the fully reported case of McKernon (*cf.* above), the reflex phenomenon of torticollis. From the extensive study of the

anatomical relations, he agreed with J. N. Mackenzie as to the intimate relation of the reflex phenomena to disturbances of the sympathetic nerves, and he concludes that the torticollis was produced by a lesion of nerve filaments in the mucous membrane, resulting in a reflex irritation of the muscular fibres engaged in rotation of the head. The disturbance may be avoided by a relatively superficial use of instruments upon the posterior pharyngeal wall, and preliminary ploughing up the adenoid tissue of that region with the finger before operating. The posterior wall seems to be the site of origin of the motor disturbances.

M. TOEPLITZ.

100. Adenoids in young infants are of much more frequent occurrence than is generally recognized, and they are frequently found in connection with purulent otitis. ROBERTS reports four cases which have occurred in children under two years of age, the youngest being not quite four months old. He prefers to operate without ether and with Hooper's forceps.

M. TOEPLITZ.

101. In WENDELL PHILIPPS's patient, a woman, aged seventy-one, wide bands of connective tissue were seen passing from the upper borders of the Eustachian orifices to the body of the sphenoid bone, each terminating in a small mass of adenoids. The Eustachian tubes were drawn upwards and medially. The bands of both sides formed an arch and were the result of adenoids. They influenced the hearing and were removed by a curved galvano-cautery electrode with flat protector made of bone.

M. TOEPLITZ.

102. According to BERG, there are two varieties of retropharyngeal abscess, namely, the chronic or cold abscesses, due to Pott's disease, and the acute abscesses, resulting from suppuration of the soft tissues behind and around the pharynx. The former occurs more frequently in adults, the acute form in very young children. Another form of retropharyngeal abscess results from impaction of foreign bodies in the posterior wall of the pharynx. The chronic abscesses due to Pott's disease lie underneath the anterior common ligament of the vertebral column, or at least beneath its external layer, and, in addition, below the so-called prevertebral fascia, and, when breaking through the former, appear in the posterior triangle of the neck and even in the axilla. For this form an external incision is, therefore, indicated. All other forms are situated behind the muscular wall of

the pharynx and in front of the prevertebral fascia and should be opened from the mouth. The remainder of the paper is taken up with the symptomatology and differential diagnosis.

M. Toeplitz.

103. In Ledermann's case, the enormous tonsils, from which the patient, a young man, aged twenty-one, had had repeated attacks follicular angina, left a chink of not over ¼″ in width between each other, the larger left one pushing the uvula to the right. Five days after their removal with the galvano-cautery snare two hemorrhages from the left tonsil, lasting five and four hours respectively, with an interval of two hours between, were each time controlled by a spray of cocaine, of four per cent. Simultaneous excruciating pain in the left ear, with signs of aural inflammation, was probably due to the exposure of some filament of the glosso-pharyngeal nerve. M. Toeplitz.

104. This paper of de Santi's contains a careful comparison of the evidence, from which the author concludes that hemorrhage following tonsillotomy is so rare that "tonsillotomy is nearly always a safe and satisfactory operation," but that in all cases we should be prepared to deal thoroughly with hemorrhage.

U. Pritchard.

105. Roos communicates several cases of a special variety of angina which is sometimes the precursor of acute articular rheumatism.

> "Rheumatic angina appears to differ from all other affections of the throat, whether of a follicular, diphtheritic, or catarrhal nature. From the observations so far made, its chief characteristics may be stated to be marked pain in swallowing; redness and swelling of the pharyngeal mucous membrane; usually swelling of one or both tonsils, with or without subsequent suppuration; the absence of any coating of pus upon the tonsils or the presence of only a very slight, diffuse purulent layer; and the comparatively protracted duration of the trouble." Rumler.

106. Mayer, after reviewing the literature of the subject and particularly dwelling upon the views of Michel and Stoerk, agrees with the latter that the galvano-cautery is of value in coalescent hypertrophies of the pharynx. For the treatment, however, of hypertrophies scattered over the whole posterior wall, he prefers curetting, which he at first performed with the modified Gottstein curette, but afterwards with an instrument of his own device. This consists of a stapes-shaped ring-knife measuring half an inch in its greatest width. Two metallic bars ending in a shaft and

handle are attached to the centre of the limbs of the ring-knife. Mayer quotes one case at length as an illustration, and appends a table of twenty cases operated with his instrument. He concludes therefrom that the entire wall may be curetted at one sitting, without danger and without subsequent cicatrization, and with speedy recovery. M. Toeplitz.

107. Brickley reports a case of lupus vulgaris in a man, aged thirty-three, in whom he found the uvula divided by a ragged ulcer, the posterior pillars much indurated and ulcerated, exhibiting all stages of ulceration and cicatrization, the posterior pharyngeal wall covered with stellate cicatrices, and an ulcer near the left Eustachian tube, and the pharyngeal vault covered with infiltrated and broken-down tissue. Curetting and lactic acid improved the condition of the pharynx and that of the left ala nasi, which was affected suddenly during the treatment of the pharynx.

M. Toeplitz.

108. In Asch's case, a woman, aged thirty-five, the growth, which produced no inconvenience, filled the right half arch completely, extending to the uvula and base of the tongue. It was flattened on its anterior surface, slightly nodular, red, and bleeding readily when touched. It proved, after removal with Knight's galvanic tonsillotome, to be an endothelioma. Another small recurring tumor was removed a month later. This is the first case of endothelioma of the tonsil on record. Prognosis unfavorable. M. Toeplitz.

109. In Cleveland's case the growth developing in a man aged sixty-five, with hereditary taint of malignancy, tumor, involved the entire uvula, extended upward on the soft palate and on either side well across the half arches. It was dense and superficially ulcerated. It proved to be an epithelioma and was removed successfully under cocaine with the galvano-cautery knife and the smallest point of the Paquelin cautery.

M. Toeplitz.

MISCELLANEOUS NOTES.

A.—BRITISH NEWS.

APPOINTMENTS.

Fullarton, Dr., has been appointed Visiting Surgeon for the Treatment of Diseases of the Throat, Nose, and Ear at the Greenock Eye Infirmary.

Hill, G. W., M.D., B.Sc. (Lond.), has been appointed Surgeon in charge of the Aural Out-patient Department at St. Mary's Hospital.

Holloway, M.D., B.A. (Cantab.), M.R.C.S., has been appointed Assistant Surgeon to the Central London Throat and Ear Hospital, Gray's Inn Road.

SOCIETIES.

Royal Academy of Medicine in Ireland—Section of Surgery.—At the meeting held on May 4, 1894, Mr. Woods read a paper on *Naso-Pharyngeal Fibroma*, relating a case in which he had used with advantage a "galvanic curette," removing the growth piecemeal and at consecutive sittings.

British Medical Association—Midland, Cambridgeshire, and Huntingdonshire Branch.—At the meeting held on June 21, 1894, Mr. W. Gifford Nash, of Bedford, gave particulars of a case of subdural abscess and septic thrombosis of the lateral sinus following otitis media. The operation performed by Mr. Nash had been in every way successful.

South Midland Branch.—At the meeting held at Peterborough on October 4, 1894, Dr. A. C. Hartley of Bedford read notes of a case of double abscess of the mastoid cells in a child of thirteen months. The exciting cause of the first abscess, on the left side, appears to have been exposure to cold ; the abscess on the right side appeared about a fortnight after. Both abscesses were freely incised, and a considerable quantity of pus escaped ; the child did well.

North of England and Border Counties Branches.—At the meeting held on October 30, 1894, Dr. Robertson exhibited diseased ossicles from the middle ear, with instruments used in removing them.

South-Eastern Branch—West Kent District.—At the meeting held on October 26, 1894, Mr. St. G. C. Reid read a paper on *Tinnitus Aurium*, and Dr. J. Dundas Grant read a paper on *Diseases of the Antrum of Highmore*, demonstrating the methods of aspirating.

KIDDERMINSTER MEDICAL ASSOCIATION.—At the meeting held on June 29, 1894, Mr. J. L. Stretton showed a child aged two and one half years from whose external auditory meatus he had removed a small portion of necrosed bone.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.—At the meeting held on July 4, 1894, Mr. Miller showed a case in which he had recently operated for subdural abscess and septic thrombosis of the lateral sinus following middle-ear disease.

BRITISH LARYNGOLOGICAL AND RHINOLOGICAL ASSOCIATION.—At the meeting held on July 13, 1894, among other important matters discussed were the following, viz.: Dr. A. Sandford read the notes of a case in which death from convulsions had taken place about six hours after the removal of adenoid growths from the post-nasal space by the scraping operation under cocaine.

Dr. Norris Wolfenden, in opening the discussion on follicular tonsillitis, dwelt on the difficulty of diagnosing this complaint from diphtheria by means of clinical evidence alone.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—At the meeting held on November 2, 1894, Mr. Secker Walker showed a patient upon whom he had recently operated for double mastoid abscess, with septic thrombosis of the left lateral sinus, following double otorrhœa. On the right side the mastoid cells only were cleared out, the sinus not being affected.

LIVERPOOL MEDICAL INSTITUTION.—At the meeting on October 18, 1894, Mr. Murray showed three cases in which he had successfully operated for cerebral abscess. In two of these the condition was the result of middle-ear disease. In one of these latter the abscess was in the temporo-sphenoidal lobe, and contained about three ounces and a half of pus; the second case was somewhat remarkable; three operations were performed before the seat of the lesion was finally discovered, when five or six ounces of pus were removed from an abscess cavity in the cerebellum; the patient made an excellent recovery, and with the others was shown at the meeting. Cases of recovery from cerebellar abscess are not very common, and Mr. Murray is to be congratulated upon his perseverance and skill.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.—At the meeting held on November 8, 1894, Mr. Pye-Smith read a paper on *Antrectomy for Persistent Suppuration of the Middle Ear and its Complications.* He showed four cases and gave the results of five others.

We would remind our English readers that the Elementary Education Act, 1893 (Blind and Deaf Children), is now in operation. By the terms of this Act the educational authorities for the respective districts, *i. e.*, the School Boards and School Attendance Committees, are bound to provide suitable and special accommodation for the education of the afflicted children within their area; in lieu of such accommodation being specially provided, the authority is empowered, on payment, to send the children to any approved blind or deaf institution, and provision is made for boarding out children coming from a distance. On the other hand, the fact of a child being blind or deaf will no longer be held sufficient excuse for its non-attendance at a suitable school. In some districts steps have already been taken for carrying out the provisions of this act, but in other districts, no doubt, attempts will be made to evade it, not only because it entails extra trouble to the School Attendance Committees, but also because many parents will object to the application of the "boarding-out" clauses. There is no necessity to point out to how great an extent the proper working of this act is dependent upon the active co-operation of medical men in general and of aural surgeons in particular. An act upon similar lines is also in force in Scotland.

To provide for the increasing accommodation required, it has been decided to erect a new building on the site of the Eye, Ear, and Throat Hospital at Cork. The cost has been estimated at £5,000, and towards this sum an anonymous donor has contributed £1,000, and Dr. Sandford, the ophthalmic surgeon, £250.

The ninth annual report of the Manchester Ear Institution shows an increase in the number of patients treated during the past year of 89. The system of special subscribers, letters, or recommendations had been abolished, and a charge of fourpence per visit substituted.

B.—REVIEWS OF BOOKS.

I.—Prof. Dr. MORITZ SCHMIDT (*Die Erkrankungen der oberen Luftwege*). **Diseases of the Upper Air Passages.** Berlin, 1894. Reviewed by AD. BARTH, Marburg.

The author does not call his work a "text-book," but prefaces it more modestly with the motto: "From practice for practice." He prefers to arrange the material in an entirely different manner from the usual plan of text-books. He discusses conjointly the separate forms of diseases of the nose, pharynx, and larynx, and, where it seems requisite, of the lungs as well, and also the symptoms which the entire organism may exhibit simultaneously, thus giving harmonious pictures which fascinate the reader and are more readily committed to memory than the traditional descriptions of most text-books. On the other hand, it is true that by this arrangement some chapters are very loosely connected with the whole. Even the motto could not always be strictly followed, inasmuch as the author, unless large gaps were left, had to discuss some subjects with which he was but slightly or nor at all familiar. Anatomy and physiology are treated in the first chapters with sufficient elaborateness for the practitioner. We emphasize the third chapter on "General Considerations." It contains for the physician an abundance of valuable suggestions, such as are in vain looked for in text-books. Some chapters, for which the author did not consider himself to be sufficient authority, were supplied by friends, in particular, neurology by Edinger and musical questions by Stockhausen. For the methods of examinations, especially in the naso-pharynx, the main stress is justly laid upon the sight; palpation occupies only a subordinate place. A work which everywhere manifests the individuality of the author, cannot, of course, be agreed with in every detail. I shall mention but a few particularly striking points. The author does not appear to be very much in favor of the use of cold for therapeutic purposes. The insoluble talc is recommended as constituent of powders for insufflation in catarrh, and also in the tuberculosis of the nose and larynx, although in other places inspiration of dusty air is warned against in these very affections. Reviewer has for years rejected these insoluble powders, using in their stead mostly biborate of soda. Potassium chlorate ought to be less recommended on account of its poisonous qualities. The causes which render the removal of the cannula after tracheotomy impossible, are not always to be looked for in its immediate neighborhood. Reviewer has observed a case in which the cannula could not be removed until after extremely hypertrophied faucial tonsils had been excised. The rejection of inhalations of pulverized fluids on page 398 contradicts their recommendation on page 400. The book, on the whole, is as suggestive as it is interesting, is supplied with many good illustrations in the text, and the appended plates are well gotten up by the publisher. It deserves the widest circulation.

T. M. HOVELL. **Diseases of the Ear and Naso-Pharynx.** London, 1895.

In this handy volume Dr. Hovell has managed to condense considerable valuable material with regard to diseases of the ear and naso-pharynx. The book is in the main well arranged. It starts with quite a complete account of the anatomy and physiology of the sound-conducting apparatus (60 pages), followed by about 80 pages more upon history-taking, the various means of physical examination, and the various measures and appliances used in the treatment of ear disease. This part is clear, well-put, and practical, although as elsewhere in the book, possibly a little too much prominence is given to the author's pet devices and to apparatus of his own invention. We cannot altogether agree with the author in thinking that in employing politzerization with perforation of the membrana tympani "there is no risk of forcing secretion into the mastoid cells," nor should we be inclined to ascribe to the Valsalva method the high value that he gives to it. A method so liable to abuse, we think, should be used with extreme caution. Next follow a series of chapters upon diseases of the external ear and membrana tympani, which are quite full and satisfactory. We should, however, have liked to see a more complete and precise account of diffuse otitis externa and particularly of the desquamative form, which, to be sure, is rarely treated of adequately. The succeeding chapter upon diseases of the naso-pharynx is too brief, but is good as far as it goes. It may be noted in passing that for removing adenoids the author prefers forceps to any form of curette. He also advocates the use of a general anæsthetic in these cases—certainly the safer and surer plan,—and gives rather minute directions for its safe administration. After a short chapter upon diseases of the Eustachian tube he takes up the affections of the middle ear, which naturally occupy a large space (about 225 pages). In spite of its fulness this part of the book is somewhat disappointing, particularly in the sections on treatment. This is especially true of the paragraphs upon the various intra-tympanic and extra-tympanic operations, the description of which is quite perfunctory. Even the directions for the various mastoid operations, though minute, read more like compilations than the authoritative statements of one writing from his own experience. Following the account of the middle-ear diseases is a chapter, which seems rather out of place, upon local and general affections liable to cause disorders of hearing ; and this again is succeeded by chapters upon injuries of the tympanum and upon otalgia. One hundred pages upon the anatomy and physiology of the internal ear (curiously enough without illustrations), and the etiology, diagnosis, symptomatology, and treatment of diseases of the sound-perceiving apparatus follow ; and some chapters on electricity, deaf-mutism, aids to hearing, and the legal aspects of aural diseases close the book. As a whole we can commend the latter both for its style, which, barring certain redundancies of expression, is excellent, and for its matter. The chief fault that we have to find is in the matter of omissions, and these are by no means so serious as to interfere with the usefulness of the work as a text-book, for which purpose it is well adapted. The mechanical execution and typography are excellent and materially enhance the availability of the book.

A D.

C.—OBITUARY.

JOHANN CHRISTIAN ERDMANN LEMCKE, 1850–1894.

From a career full ot labor, a very valuable member of our specialty has been torn away in the prime of life. Professor Lemcke died, not quite forty-four years old, at Rostock, September 11, 1894, of cancer of the liver. After having been assistant to the Rostock Medical Clinic he studied diseases of the ear, nose, and throat at Vienna, settled in Rostock, 1885, was "privat-docent" until 1892, when he was appointed professor of otology and director of the Oto-Laryngological Clinic. He made an elaborate investigation into *The Deaf-Mutism in the Grand-Duchy of Mecklenburg-Schwerin*, wrote a good paper on *Hyperostosis of the Petrous Bone and its Relation to Otitic Brain Disease*, another *on Caries and Necrosis of the Petrous Bone after Influenza*, and published a scientific report on his clinic, which contains many valuable suggestions.

SZENES.

D.—APPOINTMENT.

DR. OTTO KÖRNER, well known by his anatomical studies and other investigations, especially by his excellent monograph (163 pages, 1894) on *The Otitic Diseases of the Brain, the Meninges, and the Sinuses*, has been appointed professor in the university and director of the Oto-Laryngological Clinic at Rostock, Germany.

Contents of the last Issue (Dec., 1894) of the German Edition of these Archives (*Zeitschrift für Ohrenheilkunde*, Nos. 2 and 3 of Vol. XXVI.)

A.—ORIGINALS:

1. A. HARTMANN, Historical Remarks on the Exposure of the Tympanic Attic and Mastoid Antrum. (Translated in the present number.)

2. H. LEVI, Serous Meningitis from Chronic Otitis. (To be translated.)

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B.—TRANSLATIONS FROM THE ENGLISH EDITION.

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ARCHIVES OF OTOLOGY.

HISTORY AND AUTOPSY OF TWO CASES OF FATAL OTITIC BRAIN DISEASE.

I.—A TYPICAL ABSCESS IN THE TEMPORO-SPHENOIDAL LOBE.

II.—AN ACUTE OTITIC RETRO-PHARYNGEAL ABSCESS WITH PURULENT LEPTO-MENINGITIS OF THE CONVEXITY OF THE ANTERIOR LOBES.

By H. KNAPP.

(*With two chromo-lithographic plates, Tab. A, B, and a figure in the text.*)

THE publication of the two subjoined cases, of which I am enabled to furnish two good colored drawings of early autopsies, may not be without interest at a time when the surgical treatment of otitic brain affections is so zealously and successfully cultivated.

I.

The first case represents *a typical abscess in the temporo-sphenoidal lobe.* It was caused by chronic suppuration in the middle ear, and ended fatally by cerebral pressure from a large abscess without any further complications. The autopsy made it appear quite probable that the patient might have been saved if the abscess had been evacuated even a week before death.

The patient, G. A. N., was a young physician of New York. Had suffered since childhood from chronic bilateral otorrhœa, for which he had been treated with trichloracetic acid for several years. Since Oct. 19, 1894, he was under the care of my former pupil and assistant, Dr. J. B. McMahon, who removed polypi from the left ear. The patient had intense general headache ; no nausea. The further treatment consisted in cleansing the ear, instillation of a weak alcoholic solution of boric acid, and touching of the granulation tissue with chromic acid.

Nov. 12th.—Dr. McMahon was sent for. The patient had been in bed for two days. Intense headache. Drowsiness. No vomiting. No tenderness on pressure. Takes food. Stools regular. Pulse, 72 ; resp., 16 ; temp., 99.3° F.

Nov. 14th.—About the same. Temp., 99.7°.

Nov. 15th.—Pulse, 60 ; resp., 18 ; temp. 98.6°. Granulation tissue scraped out with a sharp spoon. Marked stupor. Questions answered with difficulty. No pain. Pupils and fundi occ. normal.

I saw the patient in consultation with Dr. McMahon on the evening of November 16th. He lay in bed, apathetic, did not answer, moved his hands only when his ear canal was cleansed with the cotton-holder. The pupils were equally wide and reacted well on a point of light being thrown into them from either side. Fundi normal. He had very intense headache, nausea, no vomiting, was very excitable. Pulse, 64 ; temp., 98.4°. Mastoid process normal.

We diagnosticated an abscess in the temporal lobe, and advised an operation to be done the next day, which was conceded ; but in the night the patient had high fever (pulse, 136 ; temp., 105.3°), and died the next morning at seven o'clock, comatose.

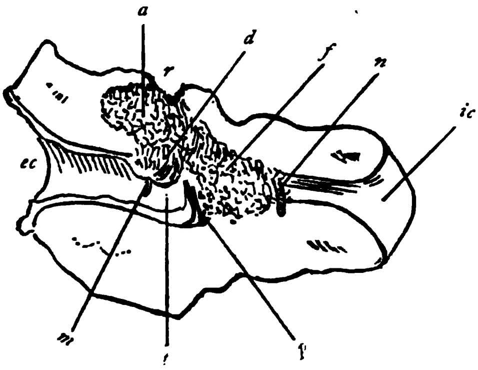
The autopsy, made eight hours after death, discovered an enormous abscess occupying almost the whole temporo-sphenoidal lobe.

The dura mater was not essentially abnormal, excepting the parts covering the petrous bone. When the dura was incised and drawn off, the superficial layer of the brain was found discolored, gray, slightly depressed, and so thinned and disintegrated that it crumbled on a slight touch, whereupon a large quantity of very offensive, creamy, greenish pus burst forth. The perforation was situated 5 *cm* above and 2½ *cm* behind the auditory canal. The abscess cavity was 8 *cm* long and 6.5 *cm* high (see plate A). It was lined with a thin, dark gray, loose layer of inspissated pus. This layer was surrounded by softened brain substance on all sides except directly inward, where the cerebral substance was normally consistent, but very vascular (see drawing in plate A).

When the brain was taken out, the dura on the anterior surface of the petrous bone was black, united to the bone, and perforated at a very small place directly in front of the eminentia arcuata. After the removal of the dura, the bone corresponding to this perforation showed a defect of 4 *mm* in diameter, occupied with granulation tissue. A probe penetrated through the defect into the tympanic cavity.

It was very remarkable that the abscess had not changed the remaining parts of the brain more perceptibly ; there were no epidural suppuration, no alteration in the soft meninges, none in the cerebral substance and the ventricles. The liquid of the latter was neither increased nor discolored. No passageway was seen from the perforation of the dura into the abscess cavity. The temporal lobe was removed, preserved on ice, opened and sketched the next day, then hardened in formol (first in 5 %, then in 10 %), and preserved. In a few days it was just as white as if it had lain in strong alcohol.

The whole petrous bone, including the mastoid process and the bones surrounding the external ear canal and the glenoidal fossa had been removed at the autopsy. The next day the petrous bone was divided with a fine saw in a vertical section which passed through the midst of the external and internal meatuses (see accompanying figure, *ec* and *ic*). The membrana tympani was absent. The manubrium mallei (*m*) projected free into the ear canal. A polypus (*d*) sprang from the bony, rough, lateral wall of the attic, occupied a part of the attic and tympanum (*t*), and was covered with thickened mucous membrane. The lower part of the tympanic cavity was empty, the medial wall (*p*) rough, on section compact and shining, perforated in the upper part. The attic (*a*) was filled with granulations and greenish masses, which extended through the perforation (*r*) in the



upper wall of the petrous bone to the floor of the middle cranial fossa, and through the perforation in the medial wall of the tympanum into the labyrinth (*f*), which they completely filled. They entered the internal auditory canal, but did not reach its orifice. The facial nerve (*n*) was well preserved. The dura mater and the bone at the posterior wall of the petrous bone were normal, as were the cerebellum and the venous sinuses.

REMARKS.

It will scarcely be possible to find a more typical case of otitic abscess in the temporo-sphenoidal lobe than the one just described. Its pathogenesis is clear and has frequently been explained. What can we learn from it? I believe that a favorable result of an operation might still have been obtained when the patient was already drowsy, for examples are on record[1] of patients having been operated on in this condition that got out of the coma immediately after the operation and recovered permanently. This would have been possible in our case, for besides the abscess and the softened area around it, no essential changes were found in the brain. The operation would, as was projected, have consisted in the thorough cleansing of the tympanic, attical, and labyrinthine cavities through the mastoid antrum, further in trephining the skull at the usual place, *i.e.*, 4 *cm* above and 3 *cm* behind the external ear canal, with a broad trephine, in the same manner as I described it last year in volume xxiii. of these ARCHIVES, p. 157, in a case successfully operated on.[2]

It is evident that such cases demonstrate with convincing force the importance of a careful treatment of all chronic otorrhœas, especially when offensive secretion, caries, and polypi are present. Here the indications are met only by a radical operation, namely, the thorough evacuation of the tympanum and its accessory cavities, including the labyrinth.

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[1] Among others I may mention the important case so well described by H. Schwartze in the last number of the *Arch. f. Ohr.*, vol. xxxiii., p. 283, 1895.

[2] The little patient whom I operated on, now fifteen months ago, presented herself lately. She was perfectly well. There was no discharge from her ear, and the walls of the tympanic cavity were lined with a delicate fibrous coat.

II.

The second case in its entire course was anything but typical.

Max Greenberg, aged twenty-four, of 97 Orchard Street, New York, came to the clinic Nov. 29, 1894. The diagnosis was acute purulent otitis media of the left ear. Headache and swelling of the skin over the mastoid process, but not in the canal. A weak alcoholic solution of boric acid prescribed. Advised to go to the hospital, which he did, Dec. 7th. His trouble began two weeks previously with severe headache, followed by an offensive discharge from the ear, and by the development of granulation tissue. The present condition was therefore probably a relapse of a previous purulent otitis. The patient complained of pain in the ear, but more particularly of pain in the entire side of the head, affecting at times the temple, at others the forehead, and again the occipital region; and this pain in different parts of the head persisted throughout the entire course of the disease. Percussion above the ear sometimes caused pain.

Dec. 8th.—The patient complained of pain behind the ear; the mastoid process was somewhat red and swollen, and the Leiter coil was used.

Dec. 10th.—Constant pain in and behind the ear, mastoid region doughy, the posterior segment of the drum membrane bulging. Paracentesis; escape of blood but no pus.

Dec. 12th.—Ice no longer of benefit. Deep pain produced by pressure on the mastoid. A regular *mastoid operation* was done in the usual way. A small amount of pus was found; a good deal of granulation tissue was removed with the curette. A probe penetrated readily into the attic. The pain in the head continued as before. Fundi oculorum, acuteness of vision, and visual field, normal; hearing in diseased ear = 0. As no improvement had resulted from the operation, a radical one was attempted.

Dec. 21st.—The former wound was dilated and a good deal of granulation tissue scraped out. At the beginning of the chiselling from a place quite near the posterior wall of the meatus a copious escape of dark blood occurred (injury of the lateral sinus). The wound was tamponed and the operation discontinued.

Dec. 24th.—Dressing and wound clean, pain greater than ever before, particularly in the ear. Paraentesis of the bulging posterior upper quadrant of the tympanic membrane. No pus.

Warm ear-douche gives no relief. The regular measurements mornings and evenings showed a variation of the pulse between 76 and 88 and of the temperature between 97.8° and 100.3°; once only, Dec. 14th, the temperature rose to 101.3°.

Dec. 25th.—Unquestionable sensitiveness on percussion 3.5 *cm* above the external ear canal. The patient *spits constantly, and complains of pain and a swelling in his throat which render swallowing difficult. The pharnygeal wall red and swollen, but no more than in a mild catarrhal pharyngitis.* No appetite.

Dec. 26th.—No improvement; therefore craniotomy. As the patient located the greatest pain directly above the ear, where he also felt percussion most painfully, further, as an extradural accumulation of pus in the middle cranial fossa appeared not improbable, I decided to make a trephine opening vertically above the ear. First I detached the auricle from the posterior wall of the ear canal and penetrated through the mastoid antrum into the tympanic cavity, cleansed the latter, particularly the attic, which contained a good deal of pus. The attic was dilated, especially forward and inward. On scraping the walls of this cavity with a sharp spoon, a small, cylindrical piece of muscle, evidently from the tensor tympani, was removed. Having in this way made room, I trephined the squama of the temporal with a trephine 2 *cm* in diameter. The dura was normal, pulsating at the beginning, but not later. I thrust a broad aspirator needle through the dura in different directions into the brain without obtaining a trace of pus. Then I detached with a probe the dura from the bone down to the bottom of the middle cranial fossa. No abnormality was found. On detaching the dura from the bone, suddenly a brisk hemorrhage ensued, which, however, was readily stopped by tamponing with corrosive sublimate gauze. The upper part of the skin wound was united, a perforated silver drainage tube inserted, and the wound dressed.

The reaction was considerable; the temperature, which on the day of the operation was 98.4°, rose on the morning of the next day, Dec. 27th, to 99.5°, in the evening to 101.1°; Dec. 28th, in the morning to 102°, and sunk on Dec. 29th to 100.4°.

Dec. 27th.—He complained of a foreign body sticking in his throat, spit constantly, could not swallow, and vomited repeatedly. Malt extract was the only food that agreed with him.

Dec. 28th.—Constant greenish vomiting; stupor; when asked he answers only yes or no, but seems to understand everything. Pupils and fundi normal.

The symptoms being aggravated in the afternoon, and the patient without further help seeming doomed, I made another operation at 4 P.M. I reopened the wound, laid a normal-looking, not pulsating, dura mater bare, incised it, and probed with a broad inspirator needle once more the temporo-sphenoidal lobe, and, finding pus nowhere, I thrust, to leave no stone unturned, a scalpel 3 *cm* directly inward and turned it at right angles in withdrawing, without any result. Then I dilated the wound in the upper part of the mastoid process and established a free communication between it and the upper part of the tympanum. Finally, to do my utmost in the desperate condition of the patient, I penetrated deeper into the bone at the lower part of the mastoid wound with the intention to penetrate into the posterior cranial fossa. The bone was healthy, containing small pneumatic cavities. In spite of the greatest care in chiselling, a sudden profuse venous hemorrhage occurred again, which was readily controlled by tampon

Drainage Tube. Dressing.

Dec. 29th.—Night quiet, sleeps the whole day, takes malt extract, vomiting and spitting ceased ; temp. 101.8 ° in the morning, 101 ° in the evening ; no discharge from the ear or the mastoid ; no pus on syringing.

Dec. 30th.—Temp. 103.6 °, pulse 84. Patient sleeps most of the time ; has incontinence of urine and spasms in his limbs.

Dec. 31st.—The same condition.

Jan. 1, 1895. Comatose ; temp., 104.1 °.

Jan. 2d.—In the morning, temp., 101.6 ° ; in the evening, 103.6 °. Respiration, 42 ; pulse, 124.

Jan. 3d, 11 A.M.—Death in coma.

Autopsy, 4 P.M. the same day (see plate B). The skull was opened in the ordinary way, dura little changed, no extradural suppuration. On detaching the dura a collection of whitish-yellow pus was found in the convex and median surfaces of both anterior lobes extending in serpentine lines along the sulci. Small subarachnoidal purulent foci were scattered over the anterior part of the parietal lobes (see plate B). The veins were very dark and dilated over the whole surface of the brain, more on the convexity than on the base. The posterior half of the convexity, the whole base, and the posterior two-thirds of both median surfaces were normal, apart from the meningeal congestion. The brain was removed as a whole, put on ice, drawn the next day, and then dissected. Both hemispheres were divided by a median section ; nothing abnormal was found on the cut surface. The left hemisphere from the vertex to the base was divided into parallel, sagittal slices about 1 *cm* in thickness ; an abscess was found nowhere. In the posterior part there was a clot surrounded by a thin zone of softened brain tissue. This clot and a very superficial extravasation on the otherwise unchanged basis of the middle cranial fossa were the only alterations referable to the operation. The brain substance protruded slightly through the perforation of the dura mater at the place of the trephining, but showed no notable changes.

It was noticed on the anterior lobes, both on their convex and median surfaces, that the suppuration was limited to the subarachnoidal space, in no place entering into the brain itself. The cerebral substance, the ventricles and their liquid, the cerebellum, and all the venous sinuses were not noticeably changed, excepting the vessels in the left Sylvian fissure which passed through a thin layer of semi-transparent exudation. The brain was put in a 10 per cent. solution of formol, then in a 5 per cent. solution. The right hemisphere was preserved as a whole.

After taking out the brain I removed the temporal bone, on which a very remarkable condition presented itself : *the upper part of the tympanic cavity was full of pus, which collected along the dilated semicanalis pro tensore tympani, in the tissues surrounding the tube, and formed a prominence in the upper pharyngeal cavity.* A probe passed from the attic through the collection of pus, pushed forward the left half of the soft palate, and could there be felt with the index finger introduced through the mouth. I cut through the soft palate to the adjacent superior wall of the pharynx, evacuating the collection of pus—an **otitic retropharyngeal abscess** connecting with the middle ear. Then I removed the tube and its surroundings, and could ascertain that the pus had not passed through the tube itself, but through the tissues surrounding it, chiefly the tensor canal. In this way the piece of muscle removed with the sharp spoon in the last operation explains itself.

REMARKS.

This kind of abscess was new to me. With more special knowledge I would not have thought the patient's constant complaints of an impediment of deglutition sufficiently explained by the visible redness of his palate, which I mistook for a simple catarrhal pharyngitis. I would have examined the upper pharyngeal cavity with mirror and finger, and by evacuation of the retro-pharyngeal abscess would have possibly saved my patient's life. I consider it probable that the pyogenic germs travelled from the abscess in some way or other, most probably along the hypophysis cerebri, which, as we know, belongs embryologically to the palate, into the cranial cavity and thence along the median surface up to the convexity of the anterior lobes. The chiasm of the optic nerves, which for the purpose of histological examination had been removed from the skull and immediately placed in a solution of formol, showed at one optic tract a fleshy intumescence, which shall be carefully examined later on.

This remarkable condition would, if correctly interpreted, present a new, and to me at least unknown, propagation passage of purulent processes from the middle ear into the cranial cavity. It is not difficult to understand that pus escapes through the natural outlets of the tympanic cavity, the Eustachian tube and the canal of the tensor tympani muscle. It is well known that through the tube it may pass into the naso-pharyngeal space, whereas it could not find an outlet through the muscular canal, but collecting would form an abscess, which might just as readily penetrate into the cranium through numerous bone defects in this locality, as pus passes through the roof of the tympanic and mastoid cavities. In this manner we might perhaps be able to account for the fatal meningitis originating in acute purulent inflammation of the middle ear, particularly its occurrence in children in whom the cranial fissures are not yet so firmly closed as in adults. When it is not possible to ascertain a channel of propagation of purulent processes through the roof of the tympanum and the mastoid process, we should in future autopsies not omit to examine the anterior outlet of the tympanic cavity.

Literary records, which I have only incompletely searched for, are very meagre. Most text-books on aural surgery do not even mention the retro-pharyngeal abscess resulting from ear disease. Those authors who refer to it state briefly that gravitation abscesses originating in the ear occur occasionally outside on the neck, rarely in the pharyngeal cavity (Urbantschitsch, Schwartze, Bosworth). Macewen, *Infective Diseases of the Brain*, etc., says: "Purulent inflammation in the tympanic cavity may extend into the Eustachian tube, in the walls of which an abscess may form and ultimately cause gravitation abscess in the naso-pharynx. These retro-pharyngeal abscesses are apt to occasion respiratory difficulties and impede deglutition." I have nowhere found a statement as to the development of lepto-meningitis from a retro-pharyngeal abscess. In the above described case I cannot demonstrate this connection either, but must content myself with the declaration that it was possible, nay, even most likely. O. Kœner (*Otitische Erkrankungen des Gehirns*, etc.), in the discussion of some cases (Ray, Panse), in which the suppuration had principally affected the convexity, makes the remark that such abscesses should perhaps be considered not as directly propagated, but as metastatic.

EXPLANATION OF THE PLATES.

Tab. A.

Abscess in the left temporo-sphenoidal lobe.

John A. N., twenty-eight years old, seen in consultation with Dr. J. B. MacMahon, Nov. 16, 1894. Chronic otorrhœa. The abscess was diagnosticated, the operation determined on for the following day. The comatose patient died the next morning. Post mortem in the afternoon.

Tab. B.

Max Greenberg, twenty-five years old, entered clinic Nov. 29, 1894, died January 4, 1895.

Acute purulent otitis and mastoiditis. Retro-pharyngeal abscess in consequence of suppuration in the tympanic cavity. Four operations for mastoiditis, otitis, and supposed cerebral abscess. No abscess found. Death from purulent lepto-meningitis of the convexity of the anterior lobes.

THREE CASES OF INFLUENZA OTITIS WITH EPIDURAL ABSCESSES.[1]

By Dr. W. VULPIUS,

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THE clinical histories of these three patients belong to the large class of sequelæ of influenza. Although it has been claimed, from a pathological, anatomical, and bacteriological standpoint, that the complications of grippe do not show any special features in comparison with the corresponding primary affections, the clinical experience gathered during the large epidemics of influenza in the last six years has proven their malignancy and gravity. The prognosis must be guarded and the treatment more careful. Thus I have made it a rule, in acute otitis media immediately following influenza, not to waste any time with palliatives, but to counteract, by an early and large (*i. e.*, galvano-caustic) paracentesis the tendency of influenza to spread to the remoter portions of the middle ear. The histories of our cases, which unfortunately came too late under treatment for carrying out this principle, will protect me from the reproach of rashness. In all three, during or after an attack of influenza, a purulent otitis media with violent symptoms developed, assuming a more subacute character in the course of a few weeks. The drainage of the tympanic cavity not being sufficient, the inflammation and suppuration invaded the mastoid cells and the posterior cranial fossa, in two cases also the middle cranial fossa. The patients came under my care while suffering from otitis media purulenta. But in one only the symptoms of purulent mastoiditis were so marked that I advised an early operation. In the remaining two an energetic galvanocaustic paracentesis of the thickened *Mt* diminished the subjective and objective symptoms to such an extent that weeks passed before I found the opening of the mastoid process indicated (on account of the peculiar character and the incurability of the abundant suppuration).

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[1] Presented before the German Medical Society of New York.

CASE 1.—History of no importance. Attack of influenza Jan. 17, 1893. After a few days severe otalgia treated with applications of chamomile tea and irrigations with sol. acid. bor. A moderate suppuration set in without abatement of pain. For a while the patient felt better under the treatment of a specialist.

March 15, 1894, he came to me with intense œdema behind and above left ear, extending over the temporal region to the left eye. The ear canal completely closed by swelling, especially of the upper wall, discharging thin pus. The fever (39.2° C.) and the tenderness of the mastoid process to pressure, with apparent fluctuation, induced me to operate the next day. The intense and rigid œdematous infiltration required an unusually large incision. No pus and no discoloration of the bone. The chisel applied at the typical point opened a mastoid cell containing pus. The probe led into a narrow fistula backwards, which I chiselled open. Thus an abscess of the sulcus sinus transversi was reached, in which the pulsating elastic sinus was felt surrounded by pus. Some other cells of the mastoid and above the upper wall of the meatus were filled with pus, and another fistula ran to an abscess the size of a bean above the tegmen antri. I opened it wide and carefully scraped the granulations of the dura mater. A suture was put in the lower end of the incision and the whole wound was tightly packed and kept open for several weeks. The dura developed at first exuberant and unhealthy granulations, which by repeated scraping and cauterization were brought to a healthy condition. Healing not disturbed save by a furuncle in the external auditory canal. The secretion of the tympanic cavity soon subsided, and after three and one half weeks the perforation was closed and the tympanic cavity free. The external wound closed after six weeks and has remained so. The hearing power of this ear is good.

CASE 2.—An otherwise healthy woman, aged twenty-four, was referred to me on April 1, 1894, by a physician who had unsuccessfully treated her for several weeks for otitis media purulenta of the left ear, after influenza. Pain in left ear and parietal region, and redness and moderate œdema of mastoid, which was painful on pressure. External meatus somewhat swollen, *Mt* bulging forward and rigid. Shrapnell's membrane, projecting in form of a sac, discharged thick pus through a small perforation. At once paracentesis (galvano-caustic) of Shrapnell's membrane and of the posterior inferior quadrant was performed ; ice applications over mastoid process. Copious and free discharge set in, relieving the pain and entirely removing the inflammatory swelling and tenderness of the mastoid within a few days. After three weeks relapse, which was relieved by enlarging the perforation. But when the pain and inflammatory swelling recurred for the third time, the suppuration not being diminished, I opened the mastoid process May 24, 1894. Corticalis healthy. A little below the surface a gray yellowish membrane presented itself, which was easily pierced by the probe ; a stream of thick, not offensive pus oozed. The whole cupola of the mastoid process formed a large abscess, from which, besides pus, a considerable quantity of spongy granulations was removed with the sharp spoon. Careful probing, however, revealed an abscess, of the size of a bean, at the floor of the middle, and a larger one at the lateral wall of the posterior cranial fossa. To gain access to the latter required the removal of the entire medial wall of the mastoid process, so that a portion of the granulating dura mater as large as half a dollar was laid bare. Healing without disturbance in five weeks. *Mt* and tympanic cavity returned to their former condition ; the previous hardness of hearing, due to sclerosis, was not diminished.

CASE 3.—A physician, who had had transient glycosuria, was seized with influenza, Jan. 14, 1894. From Jan. 21st, after slight suppuration, severe otalgia had set in, especially at night, which was relieved only for short intervals, and became more severe during the night. Tenderness of the mastoid and vertigo followed. He made warm and cold applications, syringed his ear with solutions of boric acid, and instilled alcohol. March 21st he consulted a surgeon, who referred him to me. Inflammatory swelling of mastoid and meatus. The lumen of the latter was dilated by tampons, so that a portion of the *Mt* became visible. It bulged forward and showed a very small perforation ;

galvano-caustic paracentesis was followed by subsidence of irritation. The patient felt pretty well under daily irrigations of the tympanic cavity per tubam with sterilized salt water 0.6 %, although not quite free from vertigo. He had a feeling of fulness, especially in the morning before the irrigation. *Mt* became thinner and paler, as did the mucous membrane of the tympanic cavity, as seen through the round sharp-edged perforation 1.5 *mm* wide. At this stage I observed a symptom, which in another case had helped me to form a quick and safe plan of treatment, and perhaps may be of more general value, viz.: If after thorough cleansing of the tympanic cavity by irrigation, inflation, and wiping, no pulsating drop appears in the perforation for about ten minutes nor can be produced by Valsalva's experiment, nor any other inflation of air, some pus at once bursts forth, as soon as the patient coughs. This observation I have frequently repeated, always with the same result. It indicates that somewhere pus is penned up, which is not reached by the current of air or water passing through the tympanic cavity, but has sufficient communication with the latter to be forced into it by coughing. Despite repeated enlargements of the perforation after one month and the use of astringent drops, the suppuration was not diminished. Occasionally a just noticeable œdema with very slight sensitiveness of the mastoid to pressure was observed. For about 1½ weeks the ice-bag gave quite a relief, but as the temperature became slightly raised, I urged an operation, which was performed May 29th. Cortex of mastoid healthy. An abscess-membrane was pierced, and a stream of pus emptied. Numerous granulations scraped with sharp spoon. Removal of the whole medial wall of the mastoid on account of the presence of abundant pus on the cerebellar dura mater. The latter showed a black necrotic spot in the posterior inferior angle, which after three weeks sloughed with the formation of healthy granulations. In all probability here the abscess would have broken towards the meninges. The wound, almost as large as a hen's egg, gradually filled up with granulations and was completely closed by the middle of July, 1894. The suppuration of the middle ear stopped during that time, a perforation around the umbo persisting. In the beginning of October a small point of the retro-auricular scar reopened almost without any reaction and became definitely closed within two weeks after discharging two small necrotic chips of bone. Hearing not quite restored, the perforation not being closed. Some disagreeable sensations behind ear are to be attributed to the dura mater being drawn into the scar.

In these three cases the infection of the mastoid apparently was not simultaneous with that of the tympanic cavity. In two the unyielding rigidity of the *Mt*, and the consequent impeded drainage, was the most probable cause of the propagation of the suppuration. The immediate relief obtained by a thorough drainage through galvano-caustic paracentesis was so promising that a confinement of the inflammation to the tympanic cavity and prevention of further spreading by the operation could be hoped for. At this time it was not apparent, but it became clear later, that a bone-operation was necessary. In none of the three cases the symptoms indicated more than empyema of the mastoid cells, the epidural and paraphlebitic abscesses being found during the operation. Many of these and even more serious complications may be prevented by establishing an early and sufficient drainage of the tympanic cavity, when in a state of acute purulent inflammation, and when the *Mt* is unyielding either from an individual disposition or from a special form of infiltration. Thus quite a number of operations on the mastoid process after acute purulent otitis media may be made superfluous.

RIGHT SUPPURATIVE OTITIS MEDIA; EXTENSIVE THROMBOSIS BEGINNING IN RIGHT PETRO-SQUAMOUS SINUS; LEFT CEREBELLAR ABSCESS.

By A. H. CLEVELAND, of Philadelphia.

(*With one figure in the text.*)

THE following case will be of interest in showing a remarkable and, I believe, unique form of sinus thrombosis with unusual sequelæ. It is briefly as follows:

Nicholas Van D., aged six, American, white, presented himself at the dispensary of the Presbyterian Hospital on July 18, 1894, complaining of an escape of blood and pus from right ear. A history was given of earache during the previous winter, which was variously treated with drops, roast onion, etc. These pains continued intermittently until four weeks previous to his coming to the dispensary, when they were relieved by the discharge. This soon became irregular, ceasing once or twice altogether, during these four weeks. There was no history of injury nor was the hearing apparently affected. The family history was negative. An attack of measles three years ago had had no aural complications.

When first seen there was a copious purulent discharge. After cleansing, the membrana tympani was seen to have two perforations, one a very small one in the posterior lower segment, and one much larger in Shrapnell's membrane. There was at this time some pain in the ear, but the child was bright and seemed otherwise well.

A one-quarter strength peroxide of hydrogen solution was ordered, to be used with a soft rubber syringe.

On Aug. 1, 1894, he again came to the hospital. The syringing had always relieved the pain and given much comfort. That morning, however, he had seemed drowsy and had vomited once. Finding some pain with considerable discharge and a temperature of 101.4°, he was at once admitted to the ward.

The hospital notes on admission are as follows:

Medium-sized white boy of six years. Skin and mucous membranes somewhat anæmic. Pupils normal; react to light and distance. Tongue clean, red, and moist. Pulse about normal in frequency, of good strength and volume. Examination of lungs negative. Heart sounds clear at base and apex. Abdominal viscera of normal size and position.

The temperature on admission was 102°. This sank during the two succeeding days to normal, and continued so until the evening of the 6th, when it shot up to 104°. In the course of the next day it sank to about normal, staying there for two entire days. There was then a gradual and continual increase to between 102° and 104°, at which height it remained. At no time was there a chill.

The bowels were constipated, several times requiring castor oil or an enema. The urine was clear, acid, sp. gr. 1020, showed no traces of sugar or albumen. I regret that no examination of the eye-grounds was made.

On Aug. 11, 1894, the discharge seemed to have ceased and investigation showed the membrana tympani bulging. Free incision was made in posterior segment, but no discharge followed. During the entire time he was in the hospital the patient complained of more or less pain in the right ear and in the digastric fossa. In the intervals when the temperature fell the pain was markedly less.

At no time was there the slightest tenderness or swelling over the mastoid process. There were also absolutely no symptoms pointing to involvement of the left ear.

On the 13th the pain became more intense, the respiration hurried, and there was some swelling on the right side of the face.

Owing to inability to reach Dr. Charles H. Burnett, the aurist to the hospital, Dr. O. H. Allis, of the surgical staff, saw the case in consultation.

In spite of the fact that no symptoms pointed definitely to mastoid involvement, it was thought best to make an exploratory opening. This was done with an entirely negative result. At my suggestion Dr. Allis then made a dissection for a considerable distance into the digastric fossa, hoping to find a burrowing abscess. As before no pus was found. The wounds were closed, the boy recovered from the ether, but died at 7.30 o'clock the following morning.

The autopsy was held the next afternoon and yielded the following notes:

A fairly well-developed and well-nourished boy of six years. Circumcised. Rigor mortis and post-mortem lividity well marked. Back of right ear is a recent incision, evidence of operation of yesterday. On right side extending from mastoid to clavicle is a patch of green discoloration about the thickness of a man's finger at its widest part; bordering this is a yellow discoloration.

On dissecting back the scalp an extravasation of blood is found behind and above right ear. The sutures show prominently as white lines.

The longitudinal sinus contains a few small blood clots, but is almost empty. On the *right* side the petro-squamous sinus is abnormally large and deep, being at one or two points almost entirely bridged over by bony processes. At its anterior extremity necrosis has taken place and pus has entered the sinus, causing a thrombus. This extends backward into the lateral sinus.

The *right* lateral sinus contains a bluish-yellow purulent-looking thrombus, which extends down into the jugular vein and around posteriorly into the *left* lateral.

Posteriorly in the *left* cerebellar fossa is a considerable amount of grayish-yellow lymph, adherent to the dura.

Both occipital lobes present at their extremities small patches of a dark greenish-red color, looking somewhat like small abscesses.

The membranes of the brain except over the sinuses and in the *left* cerebellar fossa seem normal. The brain is of good size, vessels well filled with blood—apparently abnormally full of blood about the base.

In addition to the two spots on the occipital lobes there seem to be spots, similar in color, on the posterior part of the superior surface of the left cerebellar hemisphere. These are apparently due to subarachnoid lymph. The ventricles seem normal, the vessels well filled with blood, especially those of the left lateral ventricle.

The spots on the occipital lobes seem to be due to the exudation of lymph beneath the pia, with discoloration and apparent softening of the subjacent gray matter. There is no distinct inflammation or suppuration more than is shown by the small amount of lymph on the outside.

Examination of the cerebrum is otherwise negative.

Examination of the cerebellum, pons, and medulla shows no change, except the spot previously noted on *left* cerebellum. Here there is not only exudation of lymph, but distinct softening of the cerebellar substance, extending to the depth of half an inch. The fissures at this point are absent, and the convolutions are entirely broken down and homogeneous.

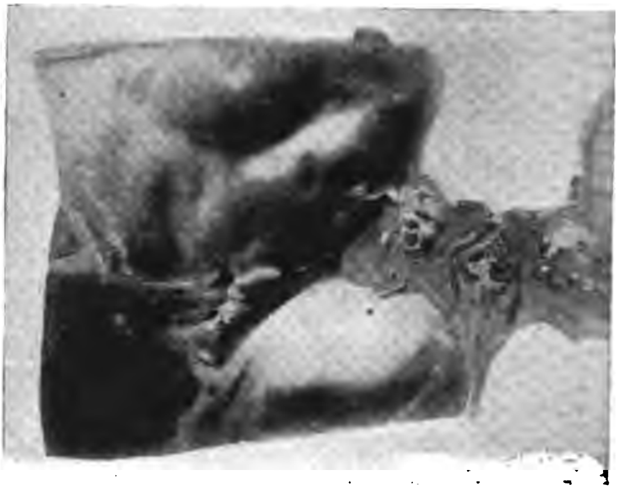
Examination of the abdomen shows slight enlargement of the liver, spleen, and pancreas. Otherwise it is negative.

Later section showed the ossicles on the right side to be apparently entirely healthy. At a point on the petro-squamous sinus nearly half an inch posterior to the communication with the middle ear there is marked necrosis of the bony wall upon the petrous side. See accompanying drawing.

The case is of interest, not only on account of the involvement of the opposite brain, but more especially as regards the persistent and enlarged petro-squamous sinus and the fact of its being the path of infection.

I am not aware of its having ever been determined in what proportion of cases this sinus is found, or to what age it usually persists. At the same time it may, as the present instance shows, become a source of the gravest danger while entirely unsuspected. Opening the lateral sinus would probably have been of no permanent benefit in this case. Had it been possible to entirely remove the thrombus from this sinus, the source of infection would still have been present.

Abscess of the *opposite* cerebellum has been reported, to my knowledge, in but three cases. Of these the first, reported by Wilks (*Med. Times and Gazette*, London, 1861, ii., p. 349), seems doubtful as, while the title of the report gives the abscess upon the opposite side, the autopsy notes appear to make it upon the same side.



Anatomical text-books rarely make mention of the petro-squamous sinus. The only descriptions I have been able to find are in *Morris' Anatomy* (1893 Ed. p. 647), and *Quain's Anatomy* (1892 Ed., vol ii., part 2, p. 524). The latter is as follows : "An additional petro-squamous sinus is sometimes present, lying in a small groove along the junction of the petrous and squamous portions of temporal bone, and opening behind into the lateral sinus. In rare cases the petro-squamous sinus is found passing through an aperture (foramen jugulare spurium) in the squamous part of the temporal bone, between the orifice of the external auditory meatus and the glenoid cavity, and then joining the temporal vein, thus resembling the arrangement in the dog and many other animals, in which a similar vessel forms the principal outlet for the intracranial blood. In the human subject also, at an early period of fœtal life, the lateral sinus is continued forward in this course, and opens into the primitive (afterwards the external) jugular vein, and the occurrence of a petro-squamous sinus is due to the persistence of this channel, which usually becomes obliterated after the development of the internal jugular vein."

The other cases are of later date and have been reported by Prentiss (*Am. Jour. Med. Sci.*, April, 1882, p. 453), and Knapp (ARCHIVES OF OTOLOGY, 1892, p. 239).

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the literature I am unable to find a report
ase or cases of mastoid operations followed by
ic attack. To Dr. E. S. Allen, of Cincinnati, I am
oted for the verbal communication of a case of this kind which he had occasion to observe at the ear-clinic at Halle in 1892. In this case I was told an epileptic attack developed about one month after a Stacke mastoid-operation. The outcome was a fatal one, as the patient collapsed, and never rallied from the epileptic coma following the convulsive attack.

The case which I am to report, previous to the operation offered the following history:

C. P., aged nineteen, well developed, well nourished young man, had always been in good health. Neither he himself, nor his parents, nor his brothers and sisters, had ever been the subject of any nervous diseases. When first seen on September 19, 1893, he stated that ever since 3½ years ago, after a cold or an influenza, he had been suffering from a running ear on the right side; this secretion, in spite of repeated treatments, had never ceased entirely.

The examination showed that the right meatus was filled with thick, yellow-greenish, extremely fetid pus. No external changes to be noticed at the mastoid region, which is not tender on pressure. Tuning-fork tests (with a small A^{440} tuning-fork): Exp. Web. to the right side; Rinné r. + 8 ; l. + 9 ; hearing distance for whispered voice, r. 5 metres ; l. more than 7 metres.

When the right meatus is syringed, masses of macerated epidermis and small epidermoidal pearls are removed. The tympanic membrane appears thickened, but the manubrium of the malleus can be seen distinctly ; a perforation of the size of a pinhead, or a little larger, presents itself in the superior anterior quarter of the membrane, very near the notch of Rivini. The sound introduced through the perforation discloses the presence of uneven, eroded bone.

The diagnosis of otitis media chronica purulenta cum cholesteatomate and necrosis in the attic being made, a mastoid operation was recommended. The patient, however, not being willing to submit to an operation at once, was first subjected to a very thorough course of treatment consisting in daily syringing, followed by the instillation of sodium tetraborate, peroxide of hydrogen, and europhen and aristol insufflation. All these therapeutical agents were tried alternately in the course of three months. The europhen and aristol powders were insufflated directly into the tympanic cavity by means of a powder-blower with a Hartmann-Bezold canula as a nozzle. The success of this treatment insisted upon almost every day for nearly three months was only a partial one ; the secretion and the fœtor diminished, but did not at any time disappear completely. The patient then gave his consent to an operation. This was performed on December 6th, at the German Hospital at Cincinnati, with the assistance of Dr. E. S. Allen and several other gentlemen.

At an examination of the circulatory and respiratory organs, made before placing the patient upon the operative table, he complained of a tickling sensation in the larynx, and a constant tendency to cough, which had made itself manifest for the last twenty-four hours or so. Nothing abnormal being ascertained by the physical examination of the lungs, no weight was attached to this statement.

The operation made under chloroform-narcosis was somewhat prolonged by the fact that the mastoid process, by the long-standing inflammatory changes, had become completely eburnated, and was extremely hard, offering a good deal of resistance to the mallet and chisel. The landmarks for the operation—the linea temporalis and the spina supra meatum—were perfectly normal in position, and the construction of the cone to be chiselled out offered no special difficulty, though the antrum was only found at a depth of from 14–15 *mm*, and its cavity was very small. The operation was not absolutely eventless, as about one hour after its inception the patient suddenly stopped breathing. The pulse, however, was good, and the respiration could be restored at once by artificial means and the stimulus of cold. The antrum, when laid open, was found to be filled with cholesteatomatous masses and soft, ill-looking granulations. So were the aditus and the attic. All the diseased bone having been removed by the chisel and the sharp spoon, the wound was washed with a carbolic-acid solution, iodoform was powdered over the open surfaces, and a tampon of iodoform gauze tightly pressed into the bony cavity made by the operation. Time of the operation, 1½ hours. Chloroform used, 50.0–60.0 grammes.

The first change of dressing occurred on Dec. 11th, the second on Dec. 13th, the third on Dec. 18th. It may be at once stated that the healing of the wound under the use of carbolic-acid solution, iodoform, and later aristol, was perfect in every respect, so that in March, 1894, the patient could be dismissed perfectly cured of his ear trouble. There was then a small diminution of the hearing distance for whispering voice for the right ear. This diminution was probably due to cicatricial contractions in the region of the annular ligament of the foot-plate of the stapes. Five days after the operation, when the dressing was changed for the first time, and the hearing power of the ear operated upon was tested there was certainly no loss, but gradually a small loss became manifest.

The temperature after the operation, which had been made under the strictest aseptic precautions, never rose above 99.40°, but the symptoms of a slight bronchitis with a yellowish viscid sputum appeared. Influenza being prevalent at the time, the sputum was examined for Pfeiffer's bacillus, and as this micro-organism was found, pure cultures were made from the sputum. They showed all the characteristics as described by Pfeiffer for his bacillus, and it was therefore evident that the patient was suffering from a mild attack of influenza, and most probably had been in the incubation stage of this disease at the time when he was subjected to the mastoid operation. The influenza took a mild course, the temperature never ran up, the wound behaved excellently and everything seemed to be all right, when on the morning of Dec. 22d I received a report concerning the patient which did disagreeably surprise me in a high degree.

The sisters at the hospital made the following statement:

The patient, the previous evening, had been up till 11 o'clock, then he retired; nothing unusual was noticed about him. Between 11½ and 12 o'clock a loud noise was suddenly heard in the private room of the patient, and when it was entered he was found on the floor near his bed, undressed, unconscious, in convulsions, biting his tongue, with foam before his mouth. He was put to bed, and after a little while, without rallying from the coma to a perfectly wide-awake state, fell asleep, and slept till late the next morning.

The patient himself made the following statement: He said that he did not feel very well the previous evening; he felt excited and restless. After he went to bed, it appeared to him suddenly that he was not in the hospital any more, but in a zoölogical garden; he saw himself surrounded by yellow lions from everywhere; he wanted to call for help, but he could not. This was all he remembered. When he woke up the next morning he felt tired and languid and weak, and he noticed with astonishment from certain observations that somebody must have been in his room during the night, but he could not remember anything at all about it.

There could not be the least doubt that here was an epileptic attack with all its details; aura, convulsive stage, post-epileptic coma, and even the distinct after-effects (languor, etc.) of the attack. The dressings were at once removed, and the wound examined; nothing giving rise to the least dissatisfaction or suspicion could be found; the iodoform-gauze tampon was lying tightly in the bony cavity, but it had never given rise to any sensation of pressure, discomfort, or pain. The wound was therefore dressed again, and the three bromides were ordered to be given three times a day (one gramme of each of them thrice daily). This medication was kept up for over two weeks. There was no recurrence of the epileptic attack; the patient made an uninterrupted recovery in every respect, and during the next few months gained rapidly in weight.

I am unable to give any opinion as to what cause or causes the epileptic attack was due. It is said that foreign bodies in the meatus or in the tympanic cavity may in children cause epileptic attacks; cases of epileptic attacks have also been reported after an influenza infection. But whether the epileptic attack reported in the above case was due to a tampon which did not give rise to any irritation, but which may have been placed too tightly into the cavity of the middle ear, or to the influenza, or to neither, I am not able even to guess at.

CASES OF EMPYEMA OF THE FRONTAL AND ETHMOIDAL SINUSES CAUSING ORBITAL TUMORS.

By DAVID N. DENNIS, M.D., Erie, Pa.

THE following cases are instructive as clinical studies, and interesting because of the comparative rarity of like recorded cases in medical literature.

Case I.—Empyema of Frontal Sinus—Operation—Recovery.

Mrs. Mary B., aged sixty-four, first consulted me on Jan. 19, 1891, complaining of constant pain in the head and around the left eye with loss of vision in this eye. General health good : family history good. For a year or more had noticed a swelling in inner and upper corner of left orbit. This had steadily increased in size ; pain in head increased by stooping. Inspection showed pronounced exophthalmus of left eye ; eyeball displaced outward and downward ; eyelids barely covering eyeball. Vision R E $\frac{6}{\text{ix}}$, L E sees objects and counts fingers ; diplopia. Ophthalmoscopic examination showed clear media ; retinal veins rather larger than normal ; optic nerve normal in appearance. In the left nostril were found two or three small polypi. Patient was sent to hospital for operation. Under ether, and with strict antiseptic precaution, an incision was made along upper margin of orbit, extending from inner angle to about its middle. The finger passed into cut, revealed sharp bony edges of opening into frontal sinus. The incision was carried down and a free opening made into sinus. There was a free discharge of muco-purulent matter ; the cavity was very thoroughly washed out with bichloride solution 1 to 1000, and then explored with little finger for a possible growth. There was nothing found. A drainage tube was passed into the cavity, and a dressing applied. The cavity was washed thoroughly twice a day. No communication being established between sinus and nostril at the end of second week, an effort was made, by removal of polypi from nose, to establish it. On the second day after their removal a severe attack of erysipelas set in ; fortunately the orbital cellular tissue was not invaded, the patient making a good recovery. It was found that good drainage had been established from sinus through nostril. The irrigation was continued for a period of four months ; at that time there was very little, if any, discharge. The exophthalmus had entirely disappeared. No diplopia. Vision both eyes $\frac{6}{ix}$. Eye-ground normal. The patient was seen again in May, 1894. There had been no recurrence of the trouble ; headache relieved. Vision, both eyes, $\frac{6}{ix}$.

Case II.—Empyema of Frontal Sinus—Operation—Recovery.

Mr. J. B. S., aged seventy-two, first consulted me on September 11, 1893. General health good ; family history good. History of exophthalmus and swelling near inner and upper margin of left orbit. This had been operated on by a surgeon some two years prior to consulting me. The result had been satisfactory. A few weeks before his visit, the eyeball had become prominent ; considerable headache ; pain aggravated in stooping ; ophthalmoscope showed clear media, normal optic nerve and vessels. The wound made at first operation was opened up and free drainage established between frontal sinus and nostril. The mucus was very tenacious and difficult of removal. Dobell's solution was used for cleansing the cavity. This treatment was kept up for three months ; the washing was then discontinued. Patient seen again on October 28, 1894. There had been no headache ; the wound had closed entirely ; no exophthalmus noticeable. Vision, $\frac{6}{6}$ in each eye.

Case III.—Empyema of Ethmoid Cells—Operation—Death from Meningitis.

Mrs. Alice G., aged thirty-two, English by birth, first consulted me on Sept. 8, 1893, giving a history of repeated crops of polypi in nostrils, that had been removed from time to time. Her physiognomy was very peculiar : eyes wide apart and very prominent ; nose very wide at bridge, increasing in width down to lower third, and then decreasing at alæ. The skin over bridge was of a reddish color. General health poor; some cough, evidently from mouth-breathing and nasal irritation. The nostrils were found filled with polypi. These being removed, the right nostril was found very capacious, the growths having crowded nasal septum far over to left side. The turbinated bodies were almost entirely gone. Left nostril correspondingly small, from encroachment of septum. Roughened bone could be felt with probe in roof of nostril; its exact location could not be determined. The patient was very much relieved by removal of growths, it being possible for her to breathe with mouth closed. The cough very much better. She reported occasionally for removal of recurring polypi until July, 1894, when she began complaining of excessive headache and pain around left eye. The vision was R $\frac{6}{\text{ix}}$, L $\frac{6}{\text{xxx}}$. There were hyperopia in the right eye and astigmatism of 2·D in the left. With these errors corrected she had vision of $\frac{6}{6}$ in each eye. Eyelid and orbital tissue œdematous; some exophthalmus; eye crowded to left; a growth could be seen at inner portion of left orbit. This was quite tender on pressure. An effort was made to establish drainage from ethmoid cells through nostril. While a considerable quantity of muco-purulent matter could be freed, it did not relieve headache and pressure around eye. The patient began to complain of night sweats, and had some fever, and increasing pain around eye. July 16, 1894, was sent to hospital for operation. Every precaution was taken to make area as aseptic as possible. Under ether an incision was made along upper margin of orbit; a second incision made along side of nose, joining the first. The triangular flap thus formed was turned down and the inner surface of orbit exposed. A bony protuberance was found, covering an area corresponding to the ethmoid sinus. This was perforated, a quantity of purulent matter escaping. The bony cells of ethmoid were broken down with the curette and free drainage established into the nostril. The nasal bones were found necrosed. A probe could be passed along outer surface of nasal bones and lower third of frontal, which was also found roughened. A free incision was made in middle of forehead down to the bone; fluid passed in at this opening escaped through the nostrils. Gauze drainage used. The gauze removed, and sinus and necrosed area of bone thoroughly irrigated every day; free drainage kept up. No fever or night sweats after free drainage was established; headache relieved. This improvement continued for about two weeks, when, in spite of the greatest care in matter of cleanliness, septic meningitis developed, patient dying on Aug. 2d. No postmortem.

The case is a peculiar one in regard to the extensive destruction produced by long-continued pressure, the almost complete absence of turbinated bodies, the carious nasal bones, and the evident extension from the nasal to the frontal bone. It would be hard to say whether the perforation in the nasal bone took place from within outward, or necrosis was produced by periostitis, and then perforation from without in. No doubt the other accessory sinuses were involved.

In cases I. and II. the mucus was so very tenacious that it was almost impossible to thoroughly empty the sinus. This was accomplished by the free use of Dobell's solution, the soda contained in the solution liquefying the mucus. After using this a 3 grain solution of silver nitrate was thrown into the cavity. This modified the secretion most decidedly, not only in quantity, but also in character. The operation usually done in cases of empyema of the frontal sinus is the one of opening the sinus from the orbit. This is the operation done in the cases given. A paper written by Dr. Guilleman, of Paris, and published in the *Arch. d'Opht.*, for Jan., Feb., March, and April, 1891, goes quite extensively into the anatomy of parts, and advocates the use of the trephine. The technique of the operation is to make an incision in the forehead a little above root of the nose; the skin and fascia, including the periosteum, are turned back. A small trephine is then used to open the frontal sinus. This is drained by passing a tube through the external opening into the sinus, and then, by means of a specially constructed probe, through the infundibulum into the nostril. It is claimed that in this way the sinus is more accessible and that drainage is more thorough. It would seem as though the disfigurement would be considerably greater than in the operation through the orbit.

A CASE OF SPONTANEOUS DEHISCENCE OF THE WALL OF THE SUPERIOR SEMICIRCULAR CANAL.

By JOHN DUNN, M.D., Richmond, Va.

HAVING occasion to remove, at autopsy, the brain of a well developed negro, aged about thirty-five, I further stripped off the dura mater from the base of the skull to examine the condition of the right lateral sinus. The appearances presented by the upper anterior and posterior surfaces of the two temporal bones have been thought worthy of being reported. It is to be stated here that no pathological conditions were present in either brain or temporal bones. The dehiscences were what have been termed spontaneous.

Right temporal bone.—Superior surface. Large, irregular dehiscence, showing several large air spaces at the petrosquamous junction; the two largest of these air cells are above and external to mastoid antrum; the innermost one opens directly into the external part of the mastoid antrum. Internal to these cells are twenty or twenty-five small dehiscences in the tegmen antri and tegmen tympani. A bristle passed into the more external of these dehiscences goes into the mastoid antrum; passed into the internal, goes into the attic and thence into the middle ear.

More internal still and slightly posterior to these last is a *transverse dehiscence, 5 mm long, of the whole of the superior bony wall of the superior semicircular canal, so that the ridge of bone usually marking the position of this canal is much reduced in size.* Thus the outer layer of the dura mater served as the superior wall for the superior canal.

More internally still is a large dehiscence over the position of the geniculate ganglion. The air space beneath this has, however, no communication with the Fallopian canal.

More internal still, the upper covering for the carotid artery shows a large gap in the bone.

The posterior surface of the petrous bone shows well marked remains of the fossa subarcuata and a very deep impression below the slit marking the entrance to the aquæductus vestibuli. The sigmoid fossa is wide and deep, but does not approach the line of operation in opening the antrum; there are no dehiscences in the outer wall of the carotid canal.

Left temporal bone.—The anterior surface here shows the same dehiscences as noticed on the right side, except that the bony covering for the superior semicircular canal is thick and the ridge well marked, and that the whole of the superior wall of the carotid canal, save just at the bend, is absent. The left sigmoid fossa is very slightly marked, so also are both the recessus and the remains of the fossa subarcuata.

On either side of the middle line the bony covering for the body of the sphenoid bone shows minute dehiscences. There is nothing noteworthy about the frontal sinuses.

The canal for the mastoid vein is very small on both sides. The canal for the occipital vein has a diameter of 1½ *mm.* The right posterior condylar foramen is wanting; the left has a diameter of 1½ *mm.* The fact that in the living subject a part of the bony wall of the superior canal is wanting for one fourth of its extent is worthy of notice, and adds one more to the already numerous avenues of escape into the cranial cavity of pus originating in middle-ear inflammations.

A NOTE ON THE TREATMENT OF OTITIS EXTERNA CIRCUMSCRIPTA, WITH SALICYLIC ACID COLLODION.

By JOHN DUNN, M.D., Richmond, Va.

THE following has proved in my hands to be the best treatment for furuncular inflammation of the external ear:

℞ Salicylic acid	ʒ i
Collodion	℥ i
	♏

Sig: Apply once daily with camel's-hair brush or with cotton and probe.

Take the following case as an illustration of the mode of action of the above combination.

Miss S., aged twenty-three, Oct. 23d came for treatment. External auditory meatus, A. S., nearly closed; pain severe; swelling greatest at upper anterior angle; enlargement of gland at angle of the jaw. I had attended Miss S. on two previous occasions for furuncle of the external canal; both times I had been obliged to make multiple incisions through the skin of the canal; on one of these occasions the swelling over the mastoid had been so great and the pain so severe as to render the diagnosis of simple furuncular inflammation of the external canal doubtful. After cleansing and *drying* the canals, in the secretions of which were found spores of one form of aspergillus fungus and the monad forms of bacteria, an application of collodion and salicylic acid was made to the whole canal external to the drum-head. The same was done each morning for three or four days; two days were then allowed to pass before the last application was made. At the end of this time, when the collodion film was removed (and, of course, the old film should be removed before each new application), the canal was found to be perfectly clean and the skin in its normal condition, save at one point, *i.e.* at the junction of the upper and anterior walls of the canal, where for an area the size of a pin's head the epithelium was raised in the form of a little teat, containing a drop of matter. The pain about the ear had entirely disappeared, and while the gland at the angle of the jaw was still somewhat swollen, it had much diminished in size and was no longer painful.

The canal, A. D., was found to be more or less completely occluded with a mycotic mass and dead epithelium. This canal was also carefully cleansed and the salicylic collodion applied as in the canal, A. S. A few applications resulted in restoring the skin to a healthy condition.

This salicylic collodion combination has proven to be the most efficacious of the remedies used for mycotic invasion of the external ear, where the drum-head has not been involved. It is not advisable to apply it to the drum-head, as the following case will show:

Dr. A., aged sixty-seven, complained of intense itching of the external auditory canals, together with gradual loss of hearing. Finding the skin of both canals apparently thickened and covered with dry scales, and the same condition existing, though to a less degree, for the skin covering the drum-heads, I applied salicylic collodion to canal walls and drum-heads. Dr. A. called the next day to say that in blowing his nose, he had ruptured the drum-head, A. D. Examination revealed a small hole just below and posterior to the end of the handle of the malleus. The collodion film was removed from both canals. No trouble resulted from the application to the left drum-head. The rupture in the right drum-head healed after a few days.

Now, while in this case I think that it was to the action of the salicylic collodion that the rupture must be attributed, removing as it does so much of the thickened epithelium, yet I think the rupture demonstrated the diseased condition of the drum-head. I do not think that the same thing would occur from the application of salicylic collodion to a healthy drum-membrane.

This combination is, again, an excellent one for relieving for a shorter or longer time the itching, sometimes so annoying, in dry, scaly conditions of the external canal.

In most cases the application of salicylic collodion to the external canal is quite painful for the few minutes while the film is forming. This painful sensation, however, quietly passes away. The action of the collodion, in preventing the spreading of the inflammation beyond the point affected, of limiting the inflamed area by constricting the adjacent skin, is much assisted by the thinness of the skin of the external canal and its firm adhesion to the cartilage and bone.

GROWTH OF THE ASPERGILLUS GLAUCUS IN THE HUMAN NOSE.

By JOHN DUNN, M.D., Richmond, Va.

SO far as the literature at my command informs me, the following is the first reported case where the Aspergillus glaucus has been seen growing in the human nose. Schubert (Nuremberg, 1889) reported three cases in which he found in the nasal secretions the Aspergillus fumigatus (?). There is, however, in the abstract of this report seen by me, nothing to show that this form of aspergillus existed in these cases in such quantities as to render them visible to the naked eye; and the question is an open one, to some degree at least, whether or not this fungus, as found by Schubert, developed in the nose, or was inhaled and deposited in the secretions in which it was afterwards found. Siebenmann, in the same year, reports a case in which, in a mass of secretions removed after death from the naso-pharynx, he found one of the varieties of aspergillus fungus. Michel suggests they developed after death. John N. Mackenzie (*N. Y. Med. Journal*, Aug. 25, 1894) reports a case of Aspergillus mycosis of the antrum of Highmore, due to the presence of an aspergillus, which Dr. Flexner is inclined to believe to be the Aspergillus fumigatus. Mycosis of the naso-pharynx, due to the presence of the leptothrix fungus, I am inclined to believe is not very rare, as I have had under my care four well marked cases of this trouble. In the case to be reported there was no inflammation of the nose due to the presence of the aspergillus, although this fungus covered two areas, each a quarter of an inch in diameter.

On Oct. 20, 1894, I applied in the case of Mr. B., aged sixty-eight, to either side of the nasal septum posteriorly, chromic acid, for the purpose of reducing a considerable hypertrophy of the erectile tissue there situated. Two weeks later Mr. B. called at my office to have a second application of acid, all treatment having in the meanwhile been neglected by him. Posterior rhinoscopy revealed the fact that the scabs made by the application of the acid had not come away. These scabs, each about a quarter of an inch in diameter, appeared in the mirror to be covered with a brownish, yellow looking substance, resembling somewhat mould as seen on the top of jellies. On removing the scabs and looking directly at them, this mould was found to be yellowish brown in mass as seen against the dark scab. Microscopic examination of this substance revealed the fact that we had to do with one of the fungi. Repeated slides of the growth and of cultures made from it convinced me it is the same fungus as that called by Massee Aspergillus glaucus (*British Fungus-Flora*, vol. iii., p. 295, London, 1893). Massee's description is as follows:

"Hyphæ creeping, floccose, branched, indistinctly septate, uncolored; fertile erect, simple, almost without septa, hyaline, or with a glaucous tinge, the apex inflated into a vesicle covered with minute cylindrical sterigmata or conidiophores, each having a chain of conidia; conidia globose, slightly asperulate, hyaline, then glaucous, 8–10 u diam.

"The conidial condition of the Eurotium herbariorum."

From the growth as obtained from the nose of Mr. B. repeated cultures were made both in sterilized agar and paste. These cultures were again and again examined at different intervals. They were examined dry and in different liquids. Several staining fluids were also used, but as they added nothing to our knowledge of the minute structure of the growth no further mention will be made of them. This mould as grown in agar or flour paste in a few days developed the characteristic dirty green color.

The above case is of interest as showing that under certain conditions the spores of the aspergillus fungus may develop both mycelium and fruit-heads in the human nose. In this case its growth was attended with no inconvenience to the patient; nor had the growth any hold on the mucous membrane, being confined to the material of the scabs, the result of the destruction of hypertrophic areas by chromic acid. It may be further said that Mr. B. has suffered many years from diabetes. There was no recurrence of the growth after removal of the scabs.

THE TREATMENT OF CHOLESTEATOMA OF THE PETROUS BONE WITH A PERMANENT RETRO-AURICULAR OPENING.[1]

BY DR. C. REINHARD,

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Translated by Dr. MAX TOEPLITZ, New York.

CHOLESTEATOMA is one of the more frequent causes of chronic suppuration of the middle ear, occurring more frequently in otitis media suppurativa chronica than one is apt to suppose. This is proven by conditions found during autopsies and operative exposures of the cavities of the middle ear. Stacke asserts that in suppuration of the attic he has found cholesteatoma in the antrum much more frequently than he had expected. I also, in those cases in which the suppuration, as a rule, was located posteriorly above, and opening of the cavities was, after many useless therapeutic attempts, required for their cure, found the antrum to be affected by deposits of cholesteatomatous membranes which by their purulent disintegration kept up the aural suppuration, while the walls of the tympanum and attic frequently exhibited spontaneous cure by epidermization.

Among 84 openings of the antrum, which I have made during the last 5½ years, cholesteatoma was found 25 times. Of these 13 are cured, in 9 the cure has lasted for from 1 to 4 years; the duration of observation of the remaining 4 cured cases extends over a period of from 2 to 10 months.

Three have died, viz., two from cerebral abscess and one from sinus-phlebitis and pyæmia. The operation upon them was performed too late. Suppuration has returned in four cases, which have been treated by securing cicatrization of the opening behind the ear and using irrigations through the opening according to the former method. Five cases are still under treatment, two of which can be very soon discharged as cured.

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[1] Read before the third meeting of the German Otological Society at Bonn, June, 1894.

Cured	13
Died	3
Relapses	4
Still under treatment	5
Total	25

The favorite location of otitic cholesteatoma, as is well known, is the antrum and the attic, from which it spreads, now rapidly, now slowly, to the remaining cells of the mastoid process. In rapid growth, the bony septa between the isolated mastoid cells succumb to the tumor, so that a more or less large cavity is formed; in slow development, when the chronic irritation due to the middle-ear suppuration has sufficient time to act, an extensive osteo-sclerosis of the entire mastoid process is almost invariably found, so that the latter is frequently to be compared to an ivory block, at the bottom of which either the antrum, enlarged by the cholesteatoma, or the aditus ad antrum is situated as the only remaining cell.

Wegener described (*cf. Arch. f. Ohrenheilk.*, vol. xxxi., p. 256) at the Tenth International Medical Congress, at Berlin, Schwartze's method of operative treatment and after-treatment of the mastoid in cholesteatoma, which consisted in the removal of the cholesteatomatous masses through the widest possible opening from the planum mastoideum, and in the formation of a large persistent opening by transplanting cutaneous flaps from the scalp. Relapses which were frequently observed after the wound had closed were thus to be prevented. Newly formed membranes could then, without another operative procedure, be removed before putrefaction took place.

While for the removal of cholesteatoma of the petrous bone Schwartze's method of opening the mastoid, with subsequent irrigations from this opening toward the tympanum, was almost exclusively practised until a few years ago; the forced irrigations through the partly artificial bony canal have lately been replaced by more extensive opening of the antrum and the remaining cavities of the middle ear. Acting upon purely surgical principles, we attempt at removing the disease directly, in which case, of course, the remaining function of the membrana tympani and remnants of the ossicles are completely sacrificed. The frequent relapses, which are especially apt to be observed in cholesteatoma, and the fact that in the latter there is anyhow, in most cases, a permanent and complete loss of function of the remnants of the membrana tympani and of the two outer ossicles, led to this sacrifice of the function of the ear to the dangerousness of the main disease. At the same abovementioned congress (Berlin, 1890), Stacke described the opening of the cavities of the middle ear in chronic suppuration, which had been previously practised in a different way, and recommended by Küster, Zaufal, and Hartmann. Stacke opens the attic by removal of the pars ossea, the aditus by removal of its lateral wall, and the antrum by extensive resections of the posterior wall of the external meatus. He thus exposes all those cavities of the middle ear, which are the favorite seats of cholesteatoma, and by coating the newly formed cavity with skin he produces a direct communication between the external meatus and antrum. Since this proposal of Stacke three and a half years have elapsed, during which period the opening of the cavities of the middle ear which he recommended could be sufficiently tested, and has fully stood the test. The question now arises, whether otitic cholesteatoma, with this extensive opening of the cavities of the middle ear, still ought to be treated according to Schwartze's view with wide, permanent opening behind the ear, as formerly, or whether a permanent opening in the *posterior wall of the external meatus* suffices to prevent relapses with their untoward consequences for the life of the patient. In small, uncomplicated cholesteatomata in the attic or antrum, it may perhaps suffice,—as was mentioned by Hartmann during the Congress of Berlin—to produce, by removal of the pars ossea and the lateral wall of the antrum, and by epidermization of this opening, a permanent opening in the posterior wall of the external meatus, through which the cavity may be conveniently inspected. Relapses should also here be expected.

On the other hand, in most cases of cholesteatoma of the temporal bone, extending beyond the antrum, and frequently complicated with caries and necrosis, an enormous cavity is found, which has developed by the growth of the cholesteatoma at the expense of the bone, and is completely filled by cholesteatomatous masses, which are disintegrated in the centre, and extremely offensive. Its walls are partly lined with a smooth, glossy layer of epidermis, partly occupied by more or less extensive areas of caries or necrosis; the septic destructive process has frequently still further extended into the cerebral cavity, leading to sinus-thrombosis, sinus-phlebitis, subdural abscess, and cerebral abscess. There exists, therefore, a vital indication for the operation. Nature has in some of these cases shown us the way to suitable treatment; viz., the anterior or the lateral wall of the mastoid is frequently perforated by fistulæ or the posterior wall of the external meatus (and simultaneously the anterior wall of the mastoid) have entirely or partially succumbed to the destructive influence of the cholesteatoma and the suppuration, so as to enable one in such cases to inspect from the external meatus the spacious cavity. I have never seen under such conditions a spontaneous cure take place, while I remember to have observed this in some cases in which, apart from the posterior wall of the external meatus, the lateral wall of the process was also destroyed, so as to present two spontaneous openings, through which, on the one hand, the secretions and the cholesteatomatous masses were discharged, while, on the other hand, free circulation of air was established. Partly following these observations, partly for practical reasons, I have, in these cases of cholesteatoma, tried to produce a *permanent opening toward the external meatus as well as in the lateral wall;* I consider this method to be superior for after-treatment, and safer against relapses, and I agree with Siebenmann[1] that, in order to produce permanent epidermization, the access of air to a cavity with rigid walls should be as unimpeded as possible.

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[1] *Berl. klin. Wochenschr.*, 1893, No. 1.

For, after complete epidermization of the cavity, now rapidly, now slowly, an excessive production of epidermis (hyperkeratosis) almost invariably takes place. Whitish-yellow membranes are cast off from the walls. The underlying bone is again lined with a thin layer of epidermis, which is also cast off after some time, until finally the entire cavity is filled with membranes. While in a cavity which had remained open only toward the external meatus *I have always seen, sooner or later, suppurative disintegration of these membranes, followed by the return of otorrhœa, I have in the permanent retro-auricular opening observed this disintegration in one case only.* All my cured cases are re-examined regularly. Even in retro-auricular opening, it is true, the above-mentioned white membranes, which by mixture with cerumen are stained brown, are formed (in some cases more frequently, sometimes but once in three years); nevertheless, the disintegration of these membranes with re-establishment of the suppuration can now more readily be prevented, since the patients or their relatives are enabled to remove the membranes, which is impossible in the case of cicatrized wounds behind the ear. Apart from these reflections, practical reasons have induced me to establish permanent retro-auricular openings.

In order to secure positive success, great importance is to be placed upon the operation as well as upon the after-treatment, which is under certain conditions still more difficult than the operation, and, which in some cases, fails of the desired success, if the retro-auricular opening is allowed too early to become smaller or close entirely. Firstly, those cases with very narrow ear canals do not permit the very painful and protracted after-treatment through the external meatus. Secondly, as it is well known to every one who has observed such severe cases of cholesteatoma, there is frequently connected with cholesteatoma a more or less extensive caries of the walls of the cavity. Small carious spots, which are situated with predilection upon the walls of the antrum, or upon the passage from the tympanum into the auditus, and which, later on, when the posterior openings of the wound are permitted to close, lead to fistulæ, may escape even the most practised eye in spite of the greatest care. One is then compelled either to reopen or to enlarge the wound behind the ear, or to treat the diseased osseous portions from the external meatus, frequently by the sense of touch only, and that too at a dismal depth and with important organs in dangerous proximity. The old proverb, "*tuto, cito et jucunde,*" is well adapted to this condition.

Some patients, whom I had the opportunity to present this year at the Otological Congress at Bonn, exhibited the above-mentioned conditions. It was indeed very difficult to invest the diseased osseous parts (medial wall of tympanum and antrum), which were covered with granulations from the adjoining parts, with an epithelial layer; the patency of the lateral opening greatly facilitated the treatment of these places by the extensive but careful use of the sharp spoon.

In a case of extensive disintegrated cholesteatoma, treated by retro-auricular opening, with a fistula in the posterior wall of the external meatus, leading into a large cholesteatomatous cavity, with sinus-thrombosis and necrosis of the sinus wall, I observed, twelve months after the operation and six weeks after complete epidermization of the entire large cavity, the sudden development of a fistula, which led toward the sinus, and, if the opening behind the ear had been closed, at any rate would have: (1) produced a relapse of the otorrhœa; (2) not been discovered so quickly, so that there would have been greater danger to the life of the patient; (3) required re-opening of the mastoid process.

Since it is too painful to keep the lateral opening by plugging, cauterization, and other means alone, during the entire duration of the after-treatment so far patent, as is necessary for convenient inspection, I try to retain from the beginning permanent patency of the retro-auricular opening. I accomplish this either:

1. By implantation of broad-based cutaneous flaps from the scalp (formation of flaps by Schwartze's method, which has proven itself to be excellent);
2. By Thiersch's transplantations; or,

3. By cutaneous flaps from the posterior surface of concha.

Before I enter more fully into the discussion of the flap formation, it may be appropriate to repeat *the description of the method of operating for cholesteatoma*[1]:

I perform at first the typical chiselling of the antrum according to Schwartze, then detach the cutaneous external meatus in its upper and posterior portion by means of the raspatory, and sever it transversely as closely as possible to the membrana tympani, without injury to the lower and anterior wall, to which point especial attention has to be directed, since for after-treatment the largest possible field of intact epidermis is required. The detached wall of the external meatus is then horizontally incised in its upper portion and the flaps are attached upward and downward by means of hooks, after careful stoppage of hemorrhage. I have now two osseous canals converging towards each other: (1) the osseous external meatus, as in the skull; and (2) the artificial osseous canal; the former leading into the tympanum, the latter into the antrum. The osseous bridge between them (posterior osseous wall of the external meatus) is then chiselled off in layers from without inward, the facial nerve at bottom being protected by a bent silver probe (or Stacke's protector). Of the upper wall of the external meatus also so much is taken off as to freely expose the attic and the aditus ad antrum. Still existing remnants of malleus, incus, membrana tympani, and also the cholesteatomatous masses, may be readily removed from all niches and corners. The use of the sharp spoon has been limited of late to the removal of granulations and portions of bone infiltrated with pus; by all means I spare the lining membrane of the cavity and avoid general scraping of the walls of the cavity, since I found that in this way healthy epithelium is taken off with the diseased one, where one's aim is directed to produce epidermis. One cavity is thus formed, which consists of external meatus, tympanum, attic, aditus, antrum, and mastoid process. All depends upon keeping this cavity as widely open as possible. How do we attain this object?

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[1] We may refer to an instructive paper entitled "Antrectomy as a Treatment for Chronic Purulent Suppuration of the Ear," by W. Arbuthnot Lane, of London, published in these ARCHIVES, vol. xxi., p. 118, etc., 1892.—H. K.

1. By flap formation according to Schwartze (*cf. Archiv f. Ohrenheilk.*, vol. xxx., p. 256). The flaps are formed according to the size of the wall of the cavity to be covered by making a parallel incision about 2 *cm* behind the original cutaneous incision, and by detaching portion of skin so limited; they should not be too thick at the external margin; their base is best located upward and is formed, according to Stacke's method, from the posterior cutaneous wall of the external meatus as a single flap, which is turned downward; one may also form another flap with the base located below. The formation of flaps from the posterior and upper cutaneous wall of the external meatus, by Stacke's method, assists in covering the uncovered portions of the cavity with epidermis.

2. By flap formation according to Thiersch, as first proposed by Siebenmann for cholesteatomatous cavities. As to the technical execution, I refer to the elaborate descriptions of the method in Siebenmann's above-mentioned paper (*Berl. klin. Wochenschr.*, 1893, No. 1), and to the description of Urban (*Deutsche Zeitschr. f. Chirurgie*, vol. xxxiv.). The assertion of Af Forselles of Helsingfors (*Archiv f. Ohrenheilk.*, vol. xxxvi., p. 145), that Schwartze's method of bringing healthy epidermis into the tympanic cavity can never be replaced by Thiersch's transplantations, I cannot allow. I consider the method as well applicable, when correctly carried out, and recommend it to my colleagues for further trial, since it enables us to lessen essentially the long duration and painfulness of after-treatment. One should not be deterred by failures in the beginning.[1]

I have found, however, that this method is not adapted to all cases. Since the extremely thin cutaneous flaps cannot be readily placed everywhere, they require for their insertion the largest possible lateral opening; those cases, therefore, in which the attic and antrum only are opened from the external meatus are to be excluded. But in wide cavities small flaps may be placed into the antrum, aditus ad antrum, and tympanum, where the bone is deprived of its mucous membrane and is not as yet covered with epidermis; one has in this way—although not all flaps attach by healing—always one or several islands of epidermis just at the remotest places, whereto epidermis could otherwise not be brought without the greatest trouble, loss of time, and even pain.

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[1] In cases where a complete epidermization is not intended, mucous membrane taken from the lip, as in Van Milligen's distichiasis operation, might be placed on the medial surface of the antro-tympanic cavity.—H. K.

3. By flap formation from the posterior surface of the concha. By this well tried method one prevents the subsequent growth of hair into the cavity, which, in flap formation from the scalp, particularly in women, is frequently very inconvenient. One should form the cutaneous flap in the beginning of the operation by cutaneous incisions made down to the cartilage 1 *cm* behind the external margin of the concha; then dissect the flap up to the mastoid process, placing its largest side upon the upper angle of the wound; and finally make the typical parallel incision behind the concha down to the periosteum.

The cutaneous defect of the concha may be covered by Thiersch's transplantations. The newly formed large cutaneous flap is attached by a stitch during the operation to the skin of the occiput and covered with moist sterilized gauze; after the formation of the cavity the flap may be formed according to the size of the surface to be covered, or divided into several portions. An advantage for the future of the operated person consists in the permanent closure of the tympanal ostium of the Eustachian tube; for by discharge of secretions from the tube into the tympanum mucus readily gathers at the bottom, while the tympanum remains dry when the ostium tubæ is closed. Cosmetic considerations against the patency of the retro-auricular opening are of little moment when compared with the severity of the affection and the seriousness of an eventual relapse. In the majority of cases there exists a vital indication for the operation. My patients (even ladies) all get used to the opening, which is covered by arrangement of the hair, and into which a small piece of cotton is loosely placed. A protecting plate could be dispensed with even during the severest labor; for particularly large openings, however, especially for those which cannot be covered by hair, a pad is to be recommended. In the five cured cases which I presented at Bonn, there existed extensive cholesteatoma of the petrous bone, complicated with caries, necrosis of the wall of the sinus, tuberculosis, sinus-thrombosis, pachymeningitis, facial paresis, vertigo, headaches, vomiting, facies Hippocratica; thus all had been operated on account of a vital indication. All cases present a retro-auricular opening. The duration of treatment up to the complete epidermization of the cavity and the permanent opening lasted from two to nine months; the duration of cure without recurrence of suppuration (certified to by constant observation) lasted from six months up to four years!

ON BINAURAL HEARING.

By Dr. EMIL BLOCH, of Freiburg in Baden.

Translated in abstract by Dr. Ward A. Holden.

BINAURAL audition has not been a frequent subject of physiological study, yet the opinions of different experimenters have so differed on important points that many questions are far from settled.

My first experiments were in regard to the phenomenon described by Le Roux, of the increase in tone sensation with binaural conduction. If two forks in unison are struck and one held before each ear, a tone of extraordinary strength and fulness is perceived. If both forks are held before one ear, the perceived tone is weaker and thinner. If one fork is held before one ear and the second fork is gradually brought near the other ear, the sensation in the first ear is increased, and later a weaker tone is perceived by the second ear. When the second fork is brought so near that the two are heard with equal intensity, the tone is no longer heard in the ears but in the interior of the head, thus forming a subjective auditory field. This increase in intensity is also obtained when the forks are not quite in unison, and a slight increase will be observed when with one ear perceiving a tone, a noise is made before the other, while two noises in unison are heard very much louder.

These phenomena can be best studied by producing the desired tone in two telephones by means of Von Kries's electric siren. When the telephone discs vibrate in similar phases, the tone is perceived in the front of the head and has a sonorous character. When the discs vibrate in opposite phases, the tone is perceived in the depth of the head between the ears, and is rougher and rattling. A large series of experiments on different individuals showed that in the great majority of cases the tone was located anteriorly when the phases were similar, and farther back in the head when they were opposite, though no satisfactory explanation of this phenomenon can be given.

The great increase in the intensity of the tone perceived has been explained by some as a simple addition of the two monaural auditory impressions, while others have conceived another factor to be present. Urbantschitsch believes that binaural audition exceeds monaural in that, besides the excitation from the external source of sound, a central subjective excitation is added, increasing the intensity of the sound perceived.

The phenomenon of the increased intensity of the sound when perceived with both ears, may be used as a test of unilateral deafness and of simulated unilateral deafness.

The most important function of binaural hearing is the recognition of the direction of sound. In my experiments in this respect the Politzer acoumeter was used. The first tests were made in a horizontal plane. The instrument was sounded once and then moved a short distance and sounded again, the person experimented on saying whether the second sound came from a point to the right or the left of the first.

The results showed that the accuracy of location gradually diminishes when from a point before the individual we pass to either side, being least at 90° and 270°, and increasing to a second maximum at 180°, which, however, is not so great as at 0°. The same results were obtained when an instrument giving a lower and more sonorous tone was used.

With one ear closed the instrument has to be moved, from directly forward, 30 *cm* for the change of position to be appreciated, while a change of 6 *cm* was recognized with both ears open. Here the accuracy of location gradually decreased, having its minimum between 180° and 270°, the position and shape of the auricle doubtless having an influence.

Experiments in a frontal plane showed the accuracy to be equally great above and below and diminished at the sides. With one ear closed a similar relation was found.

Experiments in a sagittal plane showed the accuracy of location to be less here than in any other plane, and excepting a reduction behind there was no regularity about the table.

A number of experiments made with the auricle held in an abnormal position by strips of plaster, showed in general that when the sound waves are not received by the auricle and carried into the canal, the accuracy of localization in a sagittal plane is very poor in those parts where it is ordinarily greatest. The lower portion of the auricle normally renders more difficult the entrance into the ear of waves coming from behind and below. The auricle is then arranged for the conduction of waves from in front. And recognizing its important influence in certain auditory functions, as the experiments of Kessel and my own have shown, we are no longer forced to regard the auricle as a purposeless rudiment of an organ which in the process of evolution has lost its function.

The quality of a sound has an effect on our judgment as to its direction. Loud and sustained tones of moderately high pitch are localized with greater accuracy than the softer and less sustained, and we are inclined, other things being equal, to project a weaker sound backward, and a louder one forward.

Experiments on the judgment of the distance of the source of sound showed that it was impossible to lead the patient astray by giving a greater intensity to the distant sound, and a lesser intensity to the nearer. But it was found that if the fork was held somewhat higher than the head, so that some of the overtones were lost, the flatter sound thus heard always seemed to come from a greater distance, this showing that our judgment of the relative distance of two sources of sound does not depend so much on the intensity of the tone as a whole as it does upon the intensity of the perception of the individual tones making up the whole tone.

The characteristics of binaural audition may be summed up as follows:

1. With binaural conduction of a sound there is an alternating increase in the auditory impression (Le Roux).

2. This increase grows less as the two auditory impressions become more dissimilar.

3. It depends probably not only on the addition of the bilateral acoustic excitation and the transference of the perception to the interior of the head, but also on an actual central increase of excitability (Urbantschitsch).

4. With the binaural conduction of a tone or a noise into the auditory canal, or in its neighborhood, the sound is heard in the head (Thompson; subjective auditory field of Urbantschitsch).

5. The subjective auditory field lies on the side of the stronger perception. By changing this, the location of the field may be altered at will.

6. Its location in the median plane and the perception of the character of the tone depend upon the relations between the phases of the sound waves on each side.

7. The most important function of binaural hearing is the recognition of the direction of sound.

8. This is more perfect in the horizontal and frontal planes than in the sagittal.

9. In the two former it depends chiefly upon the comparison of the intensity of the sound perception on both sides, and in less measure on the influence of the auricle on the conduction of the sound waves to the canals.

10. In the sagittal plane the last factor alone comes into play.

11. Different characteristics of the sound, such as its duration, intensity, and timbre, influence our judgment of the direction, particularly in the sagittal plane, corresponding to the more frequent excitation of the auditory nerves and the repeated experiences of daily life.

12. In the estimation of the distance of a sound we judge less from the total intensity than from the intensity of the component single sounds.

13. The judgment of the direction of sound with one ear alone is very poor.

14. It does not seem necessary, in judging of the direction of sound to take into account any other than the physiological and psychological factors here discussed.

A CASE OF EXTERNAL PACHYMENINGITIS OF AURAL ORIGIN CURED BY TREPHINING.

By Dr. A. GUYE, in Amsterdam, Holland.

HOFFMANN'S[1] statistics, published in 1888, show that in three fourths of the fatal cases of aural disease there was external pachymeningitis, passing over into leptomeningitis, cerebral abscess, or sinus-phlebitis. Hessler[2] and Körner[3] have arrived at a similar conclusion. It is evident, from many clinical and pathological observations, that, when there is a carious process in the middle ear, an external pachymeningitis may readily develop. Can the same process occur when, after paracentesis of the drum-membrane and chiselling out of all the affected portion of the mastoid, the inflammatory process in the ear is cured and has run its course with a restitutio ad integrum?

The following case seems to be of importance in answering this question.

P. H. S., æt. sixteen, consulted me on Nov. 24, 1892. From childhood he had frequently had inflammation of the middle ear, with chronic naso-pharyngeal catarrh, and occasional otorrhœa, and was quite deaf in the right ear. Six months before, his hypertrophied tonsils had been removed. Now for two weeks, perhaps from influenza, there had been pain in the left ear with evening exacerbations. Hearing, for whisper, R 0.10, L 0.40 *m.* Ordinary conversation, R 0.20, L 1. *m.* Drum-membranes fairly normal. Left mastoid very sensitive. After removal of the pharyngeal tonsil and politzerization, L, ordinary speech, 4 *m.*

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[1] *Deutsche Zeitschr. f. Chirurgie*, vol. xxviii., p. 458.
[2] *Arch. f. Ohrenheilk.*, xxxiii., 81.
[3] *The Otitic Diseases of the Brain*, etc., Frankfort, 1894.

As the improvement was only transitory, a paracentesis was made two days later through which the air passed freely. Three days later the wound was healed, but the mastoid was still very sensitive, and a second paracentesis was made. From this time on the hearing in the left ear remained normal. But as the mastoid remained tender and there was fever every evening, the mastoid was opened Dec. 4th. A layer 1 *cm* thick was removed from the entire mastoid, and behind and below I found a deep round cell full of pus and granulations. These were removed with the sharp spoon, but no communication with the tympanic cavity was found. The wound was plugged with iodoform gauze, and the course was normal under the usual after-treatment. Five weeks later the patient was discharged cured with normal hearing in the operated ear. Four weeks later he returned complaining of having had occipital pain and evening fever for two weeks, and a very tender spot on the skull 5 *cm* behind and above the ear. The mastoid scar was normal, as was also the drum-membrane. Hearing normal. Some remnants of the pharyngeal tonsil were removed, and politzerization was done, but the headache persisted, and I came to the conclusion that inflammatory germs had spread from the mastoid abscess farther into the diploë of the skull, remaining latent while the wound was open, but had become active since its cicatrization, and now threatened to lead to external pachymeningitis and eventually to an epidural abscess.

I examined the patient several times in consultation with Dr. Delprat and Professor Korteweg, and proposed to the latter, as the condition remained the same, to trephine the skull at the sensitive spot and determine whether there was not an extradural abscess there. The patient was therefore received in Professor Korteweg's wards, and while there showed, from March 2d to March 8th a daily evening rise of temperature to 37.8°–38°. The ophthalmoscopic examination by Professor Gunning gave a negative result.

The presence at the same time of some erysipelas cases in the wards was the reason for the operation being deferred so long, there being no danger from delay in this case.

The patient went home for some weeks, and then was again received into the hospital and placed under observation. The pain was unaltered, the same spot remained sensitive to pressure and percussion, and the temperature, while lower, still reached

37.5° to 38° in the evening. Finally, upon April 28th, after the condition had lasted two months and a half, the patient was trephined by Professor Korteweg. An oval flap of skin was detached and turned forwards, and a circular button of bone, 3 *cm* in diameter was removed by the trephine. Beneath this *the dura was found to be pretty normal, with no very marked hyperæmia.*

The button of bone was put back and the wound closed. The wound healed without suppuration; the patient was kept in bed three weeks, and after the operation had no longer any elevation of temperature or headache. Indeed, except for a slight supra-orbital neuralgia upon the same side during the first ten days, there was complete euphoria. I saw him on May 26th, July 18th, and Sept. 2d. Then he returned to school, and on Dec. 13th I presented him at a meeting of physicians in Amsterdam. Since the operation he has remained perfectly well.

There are two questions in regard to this case which I may enter into. The first, already mentioned, is whether a pachymeningitis externa can develop after the inflammatory process in the antrum has run its course, and when there is no longer any pus in the middle ear. In my opinion the course of the case and the result of the trephining give an answer to this question. To be sure there was no marked pachymeningitis, and not even a semblance of an extradural abscess, but there was an ostitis, which, in my opinion, would, if it had been left to itself, have given rise to an extradural abscess. And the second question, which really depends upon the first, is: Was there a sufficient indication for trephining? This question, too, is answered by the favorable result of the operation. Trephining, when done by a skilled hand and with scrupulous antisepsis, I regard as an operation comparatively free from danger. The favorable result, in my opinion, is analogous to that which we often get in chiselling away a part of the mastoid process when not a drop of pus is found. Schwartze some years back called these cases by what seems to me the not very happily-chosen name of "neuralgia mastoidea." And Buck, at a meeting of the American Otological Society, described briefly a series of such cases. He gave his paper the curious title of "The Strongly Counter-Irritant Effects of the Usual

Mastoid Operation "[1] and Knapp made upon it the very correct observation that he did not know how to conceive of a counter-irritation in this sense. In many cases we have simply a congestive mastoiditis, and the result is almost always satisfactory. Two years ago I operated upon a lady in whom, after repeated paracentesis and careful treatment, pain in the mastoid process with irregular fever persisted. In the first operation the mastoid process was chiselled pretty deeply without pus being found. While the wound was healing and for some weeks later, the patient appeared cured, and then the old symptoms, namely, spontaneous pain, sensitiveness to pressure and percussion, and evening rise of temperature, recurred.

About two months after the first operation I chiselled away what was left of the mastoid process, consisting mainly of its tip, and, as before, found no pus whatever. But after the second operation the patient was cured, and no relapse occurred.

The cranitis in our case occupies the same category as Knapp's "Congestive Mastoiditis," which, as excessive hyperæmia is not always to be found, I would prefer to call *mastoiditis sicca.* That this cranitis would have caused pachymeningitis later on is very probable, since the antecedent mastoiditis was a suppurative one. Considering the great probability of this and the serious consequences which were to be apprehended if the disease were allowed to run on, the operation of trephining was, in my opinion, justifiable, and I believe that I may feel sure that in this case a pachymeningitis externa was aborted.

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[1] *Journal of Laryngology, Rhinology, and Otology*, Dec., 1893. p. 601.

REPORT ON THE PROGRESS OF OTOLOGY DURING THE SECOND HALF OF THE YEAR 1894.

I.—NORMAL AND PATHOLOGICAL ANATOMY, HISTOLOGY, AND PHYSIOLOGY OF THE EAR AND NASO-PHARYNX.

By Prof. AD. BARTH, Marburg.

Translated by Dr. A. Duane, New York.

A.—ANATOMY.

a.—ORGAN OF HEARING.

1. Howe. Upon the comparative anatomy of the ossicles. *Trans. Amer. Otol. Soc.* (26th annual meeting), vol. v., part 3, 1893.

2. Tomka, S. A case of supernumerary ossicle in the drum-cavity of man. *Wien. Med. Wochenschr.*, No. 44, 1894.

3. Randall, B. A. Statistical studies of the foramen of Rivinus and of the axis of the external canal, in their relation to intra-tympanic surgery. *Trans. Amer. Otol. Soc.*, vol. vi., part 1, 1894.

4. Randall, B. A. Can important topographical relations of the temporal bone be determined from the form of the skull?—as answered in part by five hundred skull measurements. Arch. of Otol., July, 1894.

1. Howe's researches showed that in the mammalia the long process of the malleus sometimes remains through life as a distinct bone, retaining thus the relation which exists in man in the embryonic stage. While in many of the higher animals the mechanism of the incudo-malleal joint is like that existing in man,

it is essentially different from the latter in the bear, armadillo, guinea-pig, and others. The shape of the malleus and incus often varies considerably in orders that are nearly allied, while the stapes showed great similarity in all classes.

2. TOMKA, out of many ears which he examined, found one in which there was a supernumerary ossicle situated in the upper portion of the tympanum, to the inner side of the incudo-malleal joint. The latter was normal both as regards shape and mobility. The case is unique in literature.

3. RANDALL in summarizing his results says: "In the vertical plane the canal was found to run in this series invariably upward, unless the downward trend of its innermost part be unduly considered,—the angle varying from 5° to 17°. More than one third of the cases (right 36, left 39) showed inclination of 10°; and the angles above and below this were about equal in number and degree—giving an average of 11.37° for the right and 10.9° left. Differences between the two sides were rarely marked, the maximum of 4° right or 5° left being exceptional. This accords with my previous findings, which in this mensuration were fairly accurate. In the horizontal plane, the result was closely similar. An inclination forward of 10° was nearly as frequently found (31 right, 30 left), and the averages were 9.99° and 8.94°, respectively. Difference between the two sides was less rare, but never exceeded 7°, yet the limits of variation in different skulls were much wider, reaching from a maximum of 20° not only to the 0 point, but in one skull at least giving a backward inclination of 2°."

In regard to the visibility and accessibility of the stapes and oval window, RANDALL found in 100 cases that the stapes was present 40 times and that it was freely visible in 9, partly concealed by the annulus in 22, and in 9 quite hidden. In the remaining 160 cases, the empty oval window was freely visible in 4 (14 per cent.), partly visible in 13 (45 per cent.), and hidden in 12 (41 per cent.) of those showing inclination less than 10°, while in those of more than 10°, 26 (39 per cent.) were visible, 34 (48 per cent.) partly, and 9 (13 per cent.) wholly concealed. The writer concludes that while the forward inclination of the auditory canal is not without influence, the visibility and accessibility of the stapes region is least through the horizontal canal and greatest through that which slopes most markedly upward.

As to the presence of the foramen of Rivini, Randall found that out of a total of 260 drum-heads, there were 65 with the foramen (+ 25 doubtful cases), or exactly 25 per cent.

Among 47 children, not over fourteen years of age, the foramen was bilaterally present in but 2, on the right side alone in 3, and on the left side alone in 2; in all, 9 cases among 94 drum-heads. G. Bacon.

4. Randall concludes his paper by saying: "That safe or dangerous relations, with maximum or minimum dimensions of the intervening structures, may be found on either side and in any type of skull. The drill and trephine must be regarded as distinctly less safe than the chisel. The lateral sinus may lie directly in the usual operating tract, and be so superficial that it may be discerned through the thin bony covering. The upper posterior margin of the auditory meatus with its spina (which was lacking in but 5 among 200 temporals, each time on the right) constitutes the most reliable guide to the point of entry, since among more than 1100 temporals I have never found the middle cerebral fossa to extend lower than this, and the sigmoid sulcus almost never so far forward. The antrum ought to be met at a depth of less than 20 *mm*, and deeper penetration is rarely safe, although my measurements would indicate that the facial canal and external semicircular canal lie never less than 16 *mm* from a point 5 *mm* behind the spina." G. Bacon.

b.—NASO-PHARYNX.

5. Kalischer O. On the nerves of nasal polypi. *Arch. f. Laryng. u. Rhinol.*, vol. ii., p. 269, 1894.

6. Garel, J. Two cases of congenital anomaly of the anterior pillar of the velum palati. *Rev. de Laryng.*, etc., p. 489, 1894.

7. Scheff, G. Contributions to the theory of the anatomy and physiology of the nose. The path of the air current in the nose. *Internat. klin. Rundschau*, Nos. 40 and 42, 1894.

5. Kalischer stained the tissues with methylene blue and fixed the stain with ammonium picrate. It was thus proved that it is by no means rare for nerves to occur in polypi, but that their number in any single case is very small. They form slender fibres with narrow, oblong, often irregularly nodular nuclei. From their form and course they must be classéd with the nerve-fibres of new formation. No ganglia cells nor terminal corpuscles could be found, nor could it be made out that the nerve-fibres passed into the epithelium.

6. **Garel** describes two cases of perforation of the anterior pillar of the fauces; one on the right side, the other bilateral. The fissures were regarded as congenital.

7. **Scheff** states, as the result of his researches upon cadavers, that in breathing the air-current passes mainly through the middle meatus of the nose, and that consequently we cannot, from a physiological standpoint at least, make a distinction between a regio olfactoria and a regio respiratoria.

B.—PHYSIOLOGY AND PHYSICS.

ORGAN OF HEARING.

8. **Ewald, J. R.** On the physiology of the labyrinth. The hearing of pigeons deprived of the labyrinth. *Arch. f. d. ges. Physiol.*, vol. lix., p. 258, 1894.

9. **Wundt.** Is the auditory nerve susceptible of being stimulated by sonorous vibrations directly? *Philos. Studien*, vol. viii., 1893.

10. **Bezold, F.** Investigations concerning the average hearing power of the aged. ARCH. OF OTOL., July, 1894.

11. **Zwaardemaker, H.** The presbycusic law. *Ib.*, July, 1894.

8. **Ewald** describes anew and circumstantially his researches upon doves deprived of their labyrinth, and states that so far every case which has been thus operated upon, and in which the operation has been properly done, reacts to sound—*i. e.*, presumably hears the latter. It seems, however, somewhat doubtful whether by his method the entire labyrinth is actually removed, and furthermore whether the deep tones which he used in testing the birds were not possibly appreciated by feeling rather than by hearing.

9. According to **Wundt**, the theory of a specific nerve energy does not hold good for the auditory nerve—that is, each separate fibre of the latter appears capable of conducting all acoustic sensations, *i. e.*, those corresponding to all possible varieties of sounds.

10. **Bezold** gives the results of examination made of 200 ears of patients about fifty years of age. The following are some of the conclusions arrived at: "In the decades following that from the fiftieth to the sixtieth year there is therefore not only a suc-

cessive decrease in the number of those with nearly normal hearing, but there is also a successive increase in the degree of the deafness."

An examination as to the cause of deafness in old age showed "that the different sequelæ of former inflammatory processes are found in a much greater number from the fiftieth year on."

As to bone-conduction, "in age the middle-ear affections are less frequent as compared to inner-ear troubles," and "also in old age bone-conduction in itself does not experience a reduction, but sinks proportionally with the lessening of the hearing distance." G. BACON.

11. ZWAARDEMAKER'S conclusions are that:

1. The compass of the human hearing contracts a half octave at its upper limit up to the period of advanced old age. (Average a major fourth, maximum a major fifth.)

2. During advanced age proper, the contraction of the scale increases.

3. The upper limit is in youth at e^7, in advanced age at a^6 (average values). The extreme lower limit for normal hearing in old people is g^6.

A lower limit than this may be taken as a sign of pathological conditions. G. BACON.

II.—PATHOLOGY AND THERAPEUTICS.

BY Dr. ARTHUR HARTMANN, BERLIN.

Translated by Dr. A. DUANE, New York.

MISCELLANEOUS.

12. HAUG, R. Contributions to the theory of the pathological anatomy and histology of the organ of hearing. One plate. *Beiträge zur pathol. Anat. u. zur allg. Pathol.* (Ziegler), vol. xvi., 1894.

13. HAUG, R. Reports of various cases from the aural department of the Surgical Polyclinic in Munich. *Münch. med. Wochenschr.*, No. 34 *et seq.*, 1894.

14. RANDALL, B. A. Treatment of ear disease by the general practitioner. *Philadelphia Polyclinic*, Oct. 27, 1894.

15. GRADENIGO, G. On monaural diplacusis. ARCH. OF OTOLOGY, Oct., 1894.

16. DAAE, H. On double hearing. *Ibid.*, Oct., 1894.

17. GRADENIGO, G. Aural sclerosis as a parasyphilitic affection in late hereditary syphilis. *Archivio ital. d'otol.*, etc., No. 4, 1894.

18. SCHMIDT, W. Upon the participation of the petrous bone (especially that portion comprising the ear) in fractures of the base. *Dissert.*, Marburg, 1894.

19. DUNN, J. A case of basal fracture. ARCH. OF OTOL., July, 1894.

20. WITHERS, O. Aural vertigo. *Brit. Med. Journ.*, June 2, 1894.

21. SZENES. Upon two cured cases of deafness. *Arch. f. Ohrenheilk.*, vol. xxxvii., p. 234.

22. AVOLEDO. Diseases of the ear among the pupils in the elementary schools. *Arch. ital. di otol.*, 1894, p. 13.

23. BENEDIKT. On the question of the exercise of the hearing in deaf-mutes and the deaf. *Berl. klin. Wochenschr.*, No. 31, 1894.

24. MOUNT-BLEYER, J. Tone-blindness and the education of the ear. *Med. Bulletin*, Dec., 1894.

25. ROBERTSON, W. Deaf-mutism : an examination of the Northern Counties' Institution for the Deaf and Dumb. *Lancet*, Sept. 8, 1894.

26. HUBBARD, W. H. Deaf-mutism. *Leisure Hour*, July, 1894.

27. MOOS, S. History of a brain-tumor. ARCH. OF OTOL., Oct., 1894.

12. HAUG found : (1) On the tragus of a girl ten years of age a supernumerary nipple with abundant papillæ, glands, and smooth muscular fibres. (2) Aspergillus nigrescens was found in a case of otorrhœa occurring in a woman of thirty-four. (3) A granulation-polyp of the middle ear was found to contain hairs, obviously introduced from the outside, and surrounded by numerous foreign-body giant-cells. (4) In a woman of forty-two, from whose middle ear a polypus supposed to be fibromatous had been removed half a year before, a melanotic giant-celled sarcoma developed, which filled the auditory canal and middle ear, displaced the Eustachian tube, and occupied the entire temporal region as far as the molar arch. (5) Two cases of "circum-

scribed nodular tuberculosis of the auricle," in addition to three previously observed, are described. Macroscopically these might readily be confounded with fibromata, but microscopically, both from the arrangement of the tissues and the presence of bacilli, their tuberculous character was rendered certain. Moreover, the presence of enlarged preauricular glands pointed to an infective process. Infection from outside is regarded as the most probable cause of the affection. BARTH.

13. HAUG reports a series of cases, appealing especially to the general practitioner. Practical remarks are appended to the full description given of each. The cases are: (1) *Foreign body* (glass-bead) in the external canal driven by unskilful attempts at extraction into the tympanic cavity; consequent fever, vomiting, and otorrhœa, which all disappeared after removal under an anæsthetic. (2) *Fracture of the auditory canal* with rupture of the drum-membrane, produced by a blow upon the lower jaw; profuse hemorrhage from the ear; oblique laceration of the anterior wall of the canal with over-riding of the lips of the wound, and distinct crepitation when the jaw was moved. The laceration of the antero-inferior wall of the canal was continued over the limbus upon the drum-membrane up to and some distance alongside of the handle of the malleus; and there was a second laceration (probably due to contre-coup) starting in the postero-superior quadrant of the drum-membrane and extending into the postero-superior wall of the canal. Primary union. (3) A *tick* (Ixodes Ricinus) in the ear; occurring in a workman who had slept out in the woods. Extraction with forceps after the instillation of a sublimate solution. (4) *Paralysis of the chorda tympani* by the instillation of a 10 per cent. solution of carbolic acid in glycerin. The instillation, which was performed for an acute otitis media without discoverable perforation, was followed by sudden burning and pricking and by a sweetish taste over one-half the tongue, followed in half an hour by a furry sensation in the latter. The aural symptoms rapidly improved, but the unilateral paralysis of taste persisted. (5) *Emphysema of the drum-membrane and of the mastoid region* produced by a single application of the air-douche (at a pressure of about ½ atmosphere). The appearances produced were ecchymosis of the drum-membrane, and the formation of vesicles of the size of a pin's head or larger in its upper part and in Shrapnell's membrane together with the formation of an emphysematoms swelling of the

mastoid, which attained the size of a hen's egg. (6) *Primary syphilis of the ostium pharyngeale* of the Eustachian tube, produced by catheterization. Chancre on the ostium demonstrable by posterior rhinoscopy. (7) *Perichondritis of the auricle* cured by repeated aspiration. (8) Acute purulent otitis media with empyema of the mastoid, the direct *result of a carelessly employed nasal douche.* Typical case. MÜLLER, Stuttgart.

14. RANDALL advises the general practitioner to pay attention to the treatment of the nares and posterior nares with atomizer and alkaline solutions. Afterwards, application to vault of pharynx of 2 per cent. glycerite of iodine by means of cotton on holder. In some cases, a spray of albolene with menthol camphor 2.5 per cent. should be used, and dusting the nares with calomel is recommended where inflammatory trouble is present. The external auditory canal should be thoroughly cleansed by syringing, peroxide of hydrogen being necessary in some cases. The insufflation of boric acid powder advisable in purulent cases, pneumatic massage and Politzer inflation in catarrhal cases, and inunction with yellow oxide of mercury in furuncle or eczema of the auditory canal. G. BACON.

15. Two cases are reported by GRADENIGO, one of a musician, aged twenty-nine, a violinist and composer, who had catarrhal otitis media. No symptoms of disease of the internal ear. The second case was that of a woman, aged twenty-eight, with catarrhal otitis media (both sides) with involvement of the internal ear. The forks c^3, c^4, c^5 were heard double. G. BACON.

16. The results arrived at by DAAE are that double hearing may arise :

I.—From affection of the sound-conducting apparatus.

II.—From affections of the sound-perceiving apparatus.

III.—That in a few cases where double hearing has been declared to depend on affections of the perceiving apparatus, the real affection was in the middle ear, treatment of which caused the double hearing to diminish or disappear.

IV.—That harmonic as well as discordant double hearing may depend partly on affections of the inner, partly on affections of the middle ear. G. BACON.

17. According to GRADENIGO, aural sclerosis due to syphilis affects especially the sound-conducting apparatus, but does sometimes affect the sound-perceiving apparatus as well. The aural affection may be the only evidence of the diathesis, and then the

diagnosis may be made from proofs afforded by the parents or the brothers or sisters. Keratitis or symptoms on the part of the teeth are frequently present. Prognosis unfavorable.

GRADENIGO.

18. SCHMIDT, in discussing the subject of fracture of the base of the skull with involvement of the ear, adduces 69 cases from literature and 10 additional ones observed in the Marburg Polyclinic. The result is a renewed confirmation of the fact that no certain conclusions with respect to the anatomical situation, the gravity, or the subsequent behavior of the fracture can be drawn from the external appearances in the ear and from the functional disturbances. The impairment of hearing in some cases is such as would indicate a lesion of the middle ear, in some others a lesion of the inner ear, but in most a lesion of both together. Subjective noises are very pronounced and sometimes are marked upon the non-affected side. Disturbances of equilibrium and vertiginous symptoms are rarely absent, but it is not certain from the author's statements whether these phenomena may not be the direct result of the severe primary lesion of the skull itself. Facial paralysis was found in 44 out of the 79 cases.

ZIMMERMANN.

19. DUNN reports the case of a farmer, aged fifty-six, who was thrown from a wagon and who was at the same time struck by a barrel of flour on the right temporal region. There developed complete paralysis of the fifth, sixth, and seventh nerves of the right side. Drumhead normal; slight diminution of power of hearing in the right ear; slight tinnitus. The condition of the patient was unchanged when seen five months later.

G. BACON.

20. In connection with the attention which has recently been directed to the subject of auditory vertigo by the papers and letters of Dr. Stephen Mackenzie, Sir William Dalby, and others, Dr. WITHERS of Sale, Cheshire, writes to advocate the employment of venesection in those cases in which the vertigo is obviously the result of increased arterial tension and symptomatic of impending apoplexy. Dr. Withers relates some striking particulars of a case in which prompt venesection was followed by immediate benefit.

SILK.

21. SZENES reports the case of a child who two weeks before it came under observation had been affected with earache and transient discharge. Constant diminution of hearing in spite of

inflation until, in the course of four weeks neither the watch nor the tuning-fork was heard either by air- or bone-conduction. After the employment of seven injections of pilocarpine the hearing suddenly returned and remained unimpaired. This result is attributed to the pilocarpine. But the author likewise adduces a case in which the hearing was restored by rest alone. This was in the case of a man of sixty with atheromatous vessels, in whom sudden deafness set in accompanied by vertigo and vomiting. The hearing returned in the course of thirty-six hours, but the vertigo persisted at least ten days. RUMLER.

22. AVOLEDO gives an interesting statistical statement of his examinations made upon pupils in the elementary schools, and confirms the results before obtained with regard to the frequency of ear disease among them. GRADENIGO.

24. In this paper MOUNT-BLEYER gives an account of the science and study of acoustics from the earliest times, and dwells especially on the importance of a study of the laws of acoustics in their relations to aural science. He speaks of the phonograph as an aid to precision and of its value as an ear educator ; also of the training of the ear, and concludes with remarks on the training of the voice and study of music. G. BACON.

25. In this paper, which is accompanied by a series of fourteen elaborate statistical tables, ROBERTSON expresses the following opinions, viz.: (1) That scarlet fever and brain disease are the most common causes of deaf-mutism. (2) That in the majority of the scarlet-fever cases the deaf-mutism is probably the result of an affection of the internal ear. (3) That cerebro-spinal meningitis is the most common cause of cerebral deaf-mutism. (4) That in the majority of cases the deaf-mutism develops before the end of the third year. (5) That a very large proportion of deaf-mutes may be said to have normal middle ears. (6) That catarrh and hyperplasia of the mucous membranes adjacent to the ear are present in an abnormal number of cases. (7) That cases of total deafness are more common among those in whom the deaf-mutism is acquired than among the congenital deaf-mutes, and that more than one half of all cases are totally deaf. (8) That inheritance, consanguineous marriages, etc., play an important part in the production of this condition. SILK.

26. Dr. HUBBARD has published in pamphlet form the paper on deaf-mutism written by him for the *Leisure Hour* in July, and the statistics, given in popular form, are of much interest to all

aural surgeons. It is satisfactory to learn from this paper that according to recent census returns the proportion of deaf-mutes to total population is diminishing. In 1851 it was as 1 to 1738, in 1891 as 1 to 2043. Among Jews the proportion appears to be rather higher than usual, the result probably of hereditary influences and consanguineous marriages. SILK.

27. Moos gives a most interesting history of a patient, aged twenty-one, in whom the diagnosis of an affection of the cerebellum and medulla, probably a tumor (glioma), was made during life. At the autopsy, the tumor was found on the under surface of the cerebellum, involving also the outer part of the left half of the pons and the adjoining section of the crura of the cerebrum, and extending towards the medulla oblongata, and penetrating to the interior of the left hemisphere of the cerebellum. The tumor was found to be a primary, mainly small-celled sarcoma.

G. BACON.

INSTRUMENTS AND METHODS OF EXAMINATION.

28. SMITH, W. HARVEY. The application of the graphic method to hearing. *Med. Record*, Oct. 20, 1894.

29. SCHWABACH. Upon the diagnostic value of the tuning-fork tests, as deduced from observations made in a case of tumor of the base of the skull. *Berl. klin. Wochenschr.*, No. 43, 1894.

30. ALDERTON, H. A. Investigations with tuning-forks of middle register in over six hundred cases. ARCH. OF OTOL., July, 1894.

31. ZWAARDEMAKER, H. Hearing for speech and hearing for tones in general, and the measurement of the latter by Gradenigo's auditory field. *Arch. f. Otol.*, Oct., 1894.

32. GRADENIGO. Relation between the hearing-distance for the whisper and that for the watch, as a diagnostic sign in diseases of the ear. *Giornale della R. Acc. di Medic. di Torino*, Nos. 4 and 5, 1894.

33. CHEATLE, A .Aural auscultation-tube. *Br. Med. Journ*, Sept. 22, 1894.

34. DE ROSSI. Upon some experiments with myringography and upon a new method of performing massage of the middle ear. *Arch. ital. di otol.*, p. 281, 1894.

35. WINGRAVE, WYATT. Self-retaining aural polypus-forceps. *Lancet*, Dec. 8, 1894.

36. **Lund.** Ear-syringe guard. *Lancet*, Sept. 29, 1894.

37. **Pliques.** Electricity in otology. *Annales des mal. de l'oreille*, etc., vol. ix., 1894.

38. **Wagner, H. L.** Value of antroscopy. *Journ. Amer. Med. Assoc.*, Sept. 29, 1894.

39. **Avellis.** Description of a pocket-case for throat, nose, and ear specialists, and of a modified laryngeal mirror. *Arch. f. Laryngol.*, etc., vol. i., part 1.

40. **Keimer.** A new handle for galvano-cautery loops. *Ib.*, vol. i., part 1.

41. **McDonald, G.** Universal nasal snare. *Lancet*, Dec. 1, 1894.

42. **Boyd, Stanley.** A tonsillotome. *Br. Med. Journ.*, June 18, 1894.

43. **Kelly, A. B.** Tonsil-punch. *Lancet*, July 17, 1893.

44. **Gleitsmann, J. W.** A new conchotome. *N. Y. Med. Journ.*, Dec. 15, 1894.

45. **Rankin, D. N.** New serrated nasal scissors for the removal of hypertrophies and turbinated tissues. *Med. Record*, Nov. 17, 1894.

46. **Chappell, W. F.** The annular septum-knife. *Med. Record*, Feb. 10, 1894.

47. **Goldstein, Sam.** A new uvulatome. *Ib.*, Sept. 8, 1894.

28. **Smith**'s chart has been devised to provide the otologist with the means of representing the results of tuning-fork and other tests, so that the slightest deviation from the normal can be perceived at a glance, and the comparative differences between the aërial and bone-conduction, and the results of the acoumeter, the voice, and the watch tests can be readily appreciated. The hearing power is expressed in percentages, which are based upon the results obtained from the use of Hartmann's tuning-forks, the acoumeter, the voice, and the watch. G. Bacon.

29. In a patient affected with an epithelioma starting from the sphenoidal sinus, **Schwabach** was able to test the value of the tuning-fork in the diagnosis of aural disease. The patient at the time of his entrance into the hospital had almost normal hearing, which, however, steadily decreased. From the result of examinations made with high- and low-pitched forks, using both Rinné's

and Weber's tests, Schwabach inferred the existence of an affection of the sound-conducting apparatus. This assumption was confirmed by autopsy. RUMLER.

30. ALDERTON presents the results of experiments extending over 1891 and part of 1892. Hartmann's series of forks were employed. G. BACON.

31. ZWAARDEMAKER's results may be summarized as follows: 1. If Gradenigo's auditory field is completed and constructed according to physical laws, it furnishes an absolute measure for the acuteness of hearing. 2. For the construction of the auditory field five observations will provisionally suffice: lower boundary tone, C, c^2, $f\sharp^4$, and upper boundary tone. 3. For certain scientific examinations a more exact estimate of the auditory field will be required. G. BACON.

32. GRADENIGO's conclusions are as follows: (1) The hearing-distance for the whispered voice may be affected to the same extent as that for the watch. This occurs especially in slight affections of the sound-conducting apparatus. (2) The hearing-distance for the whisper may be somewhat greater proportionately than that for the watch. This is the most frequent type in affections of the sound-conducting apparatus. (3) The whisper may be heard much farther, comparatively speaking, than is the watch. This occurs especially in affections of the internal ear. (4) The hearing-distance for the watch may be greater, comparatively speaking, than the hearing-distance for the whisper. This occurs in acoustic hyperæsthesia of an hysterical character.

GRADENIGO.

33. CHEATLE figures and describes a simple and useful form of apparatus designed for the comfort and convenience of both the surgeon and the patient. It consists essentially of two light metal springs, one of which passes over the vertex of the surgeon on a level with the external meatus, and the other is placed in a similar position on the patient. At the end of the spring nearest the meatus is a small catch, into which fits a nozzle of wood or bone, communicating by means of a rubber tube with the corresponding nozzle on the other spring; by this means the irritation which often results from the constant shifting of the nozzle is avoided. SILK.

34. DE ROSSI describes and figures an instrument devised by him, and designed for the transmission of the vibrations of a tuning-fork. A membrane, set in vibration by the tuning-fork,

transmits its oscillations through a column of fluid to another membrane, which necessarily vibrates in unison with the former, and which may be connected with a recording apparatus for indicating graphically the results. The author describes briefly some experiments which he made in this way upon man.

GRADENIGO.

35. In WINGRAVE's polypus-forceps self-retention is secured by means of a cross-spring action rather than by a slide or a clamping-spring. SILK.

36. Messrs. Wright & Co., at the suggestion of Mr. LUND of Manchester, have devised a simple form of guard to avoid injuring the deeper structures of the meatus should the patient make a sudden movement. The nozzle of the syringe is cut into a screw upon which runs a small globular nut of metal ; this nut being fixed at the required distance, the nozzle is passed through a hole in a band of metal held across the meatus by means of the disengaged hand. SILK.

37. The following heads comprise a synopsis of PLIQUES's paper :

I. *Experimental facts upon which the study of the subject is based.* 1. Normal excitability of the auditory nerve. (Difficulties in the way of making the investigation, depending upon the depth at which the nerve is situated, upon the proximity of the facial nerve, and the relations presented by the central organs. The continued current is the only one that is applicable, and the best procedure is that of Erb, the intensity requisite to produce an auditory reaction being from 4 to 6 milliampères). 2. Altered excitability of the nerve, comprising : (*a*) Pathological increase of excitability (in perforations of the drum-membrane and affections of the labryinth) ; (*b*) qualitative alteration of the excitability (severe affections of the labyrinth) ; (*c*) paradoxical excitability (*i.e.*, auditory sensation in ear to which the electrode has not been applied—a condition having no diagnostic significance) ; (*d*) diminished excitability (labyrinthine disease, or, if accompanied by tinnitus, neuritis of the auditory nerve). 3. Diagnostic value of the abnormal reactions. (Increased excitability corresponds to a hyperæmia of the labyrinth and not to an inflammation of the remoter parts, and, in the case of tumor or injury of the brain, is often associated with a neuro-retinitis). 4. Influence of electricity upon the auditory nerve. (The current gradually increases the excitability of the latter, and electric shocks are injurious to the function of the nerve.) 5. Disappearance in deaf-mutes of the vertigo produced by galvanic stimulation. 6. Effect on subjective noises. (These increase at the beginning of application of the current, and are diminished when the latter is broken.)

II. *Methods of electrization*, comprising: 1. The constant current. (The positive pole, the efficient one; the negative pole injurious. Application of a weak current which is increased slowly and gradually, sudden shocks or reversal of the current not being employed.) 2. The interrupted current. (Useful to mobilize the ossicles; the electrode immersed in salt water which fills the auditory canal. Unpleasant reflex phenomena.) 3. Static electricity, sparks, and electric baths. (Little used; action a superficial one.)

III. *Therapeutic application.* 1. In tinnitus. Weak constant currents without sudden changes. Application of Gellé's metallic brush. Improvement not constant; sometimes condition rendered worse. 2. Otalgiæ. Continuous current combined with cocaine-anæsthesia, useful in neuralgic pain (Mássini). 3. Ménière's disease. Weak currents (to be carefully watched) (Politzer). 4. Opacities of the drum-membrane. Very moderate effect. 5. Ankylosis of the chain of ossicles. Sparks employed; electricity especially useful in incomplete ankylosis. 6. Deafness. Electricity not applicable in labyrinthine deafness. Faradization in hysterical deafness. RIPAULT.

38. Antroscopy is the ocular inspection of the antrum of Highmore by means of an endoscope introduced through an opening made in the canine fossa. According to WAGNER, it is useful for discovering the presence of a drainage tube, of a polypus near the hiatus semilunaris, or of bony partition-walls in the antrum; also, for making the differential diagnosis of an angioma, and for assisting in the operation of curetting. TOEPLITZ.

39. AVELLIS's laryngoscopic mirror admits of being taken apart. Each patient is thus enabled to have his own mirror, which he carries in his pocket-book, while the physician carries the handle to the instrument in his instrument-case. The connection between mirror and handle is made by inserting a knob soldered upon the former into a triangular slit in the latter. [Avellis recommends this construction because the ordinary glass laryngoscopic mirror cannot be disinfected as thoroughly as we ought to require; but this is not true of the mirror made by P. Doerffel, in Berlin, which admits of being immersed in boiling

water for upwards of 2 minutes. As this can be done 25 times before the mirror gives out, the cost of each examination is only about 5 pfennings (a little over 1 cent).—REVIEWER.] Avellis's instrument-case contains in very small compass 6 mirrors, 1 shank for the same, 2 handles, 1 nasal speculum (modified from that of Fränkel), 1 tongue spatula, bulb-pointed and fluted laryngeal and nasal sounds, which can also be used for the ear, cotton-holders, knife, squint-hook, 3 ear-specula, 1 vial of cocaine, and 1 reflector with head-band. The whole, complete, costs from 50 to 63 marks, and can be had of Steiner, 58 Allerheiligenstrasse, Frankfort-a.-M. ZARNIKO.

40. KEIMER has devised a handle for a galvano-cautery snare, the novel feature of which consists in the fact that contact is effected by the forward movement of a slide attached to the ring in which the thumb is inserted. Manufactured by Blänsdorf's successors in Frankfort-a.-M. ZARNIKO.

41. MCDONALD's instrument is based upon those devised by Mackenzie and Jarvis, respectively. The particular advantages claimed for it are, that the wire need not be entirely withdrawn into the barrel, and so is less likely to break. By an ingenious mechanism, too, the growth, after once it has been firmly grasped by the wire loop, can be twisted or torn off if the operator should consider that method preferable to simply permitting the wire to cut its way through. SILK.

42. The tonsillotome described by BOYD differs from Mackenzie's well-known instrument, inasmuch as it is operated by a trigger or pulling action, and consequently the cutting surface is ring-shaped rather than spade- or chisel-shaped. To improve the grasp, the instrument is furnished with a handle which has been modelled to the shape of the closed hand, somewhat after the manner of modern midwifery forceps. SILK.

43. Mr. KELLY (of Glasgow) suggests that in certain cases the use of the tonsillotome is inadvisable, and that in these cases it is better to punch a series of small pieces out of the tonsil, rather than slice off the whole mass. An instrument for this purpose is figured and described. SILK.

44. GLEITSMANN's conchotome has one cutting blade; the other, of soft metal, being introduced between the septum and middle turbinate. A separate instrument is needed for each side.
TOEPLITZ.

scribed nodular tuberculosis of the auricle," in addition to three previously observed, are described. Macroscopically these might readily be confounded with fibromata, but microscopically, both from the arrangement of the tissues and the presence of bacilli, their tuberculous character was rendered certain. Moreover, the presence of enlarged preauricular glands pointed to an infective process. Infection from outside is regarded as the most probable cause of the affection. BARTH.

13. HAUG reports a series of cases, appealing especially to the general practitioner. Practical remarks are appended to the full description given of each. The cases are: (1) *Foreign body* (glass-bead) in the external canal driven by unskilful attempts at extraction into the tympanic cavity; consequent fever, vomiting, and otorrhœa, which all disappeared after removal under an anæsthetic. (2) *Fracture of the auditory canal* with rupture of the drum-membrane, produced by a blow upon the lower jaw; profuse hemorrhage from the ear; oblique laceration of the anterior wall of the canal with over-riding of the lips of the wound, and distinct crepitation when the jaw was moved. The laceration of the antero-inferior wall of the canal was continued over the limbus upon the drum-membrane up to and some distance alongside of the handle of the malleus; and there was a second laceration (probably due to contre-coup) starting in the postero-superior quadrant of the drum-membrane and extending into the postero-superior wall of the canal. Primary union. (3) A *tick* (Ixodes Ricinus) in the ear; occurring in a workman who had slept out in the woods. Extraction with forceps after the instillation of a sublimate solution. (4) *Paralysis of the chorda tympani* by the instillation of a 10 per cent. solution of carbolic acid in glycerin. The instillation, which was performed for an acute otitis media without discoverable perforation, was followed by sudden burning and pricking and by a sweetish taste over one-half the tongue, followed in half an hour by a furry sensation in the latter. The aural symptoms rapidly improved, but the unilateral paralysis of taste persisted. (5) *Emphysema of the drum-membrane and of the mastoid region* produced by a single application of the air-douche (at a pressure of about ½ atmosphere). The appearances produced were ecchymosis of the drum-membrane, and the formation of vesicles of the size of a pin's head or larger in its upper part and in Shrapnell's membrane together with the formation of an emphysematoms swelling of the

mastoid, which attained the size of a hen's egg. (6) *Primary syphilis of the ostium pharyngeale* of the Eustachian tube, produced by catheterization. Chancre on the ostium demonstrable by posterior rhinoscopy. (7) *Perichondritis of the auricle* cured by repeated aspiration. (8) Acute purulent otitis media with empyema of the mastoid, the direct *result of a carelessly employed nasal douche.* Typical case. MÜLLER, Stuttgart.

14. RANDALL advises the general practitioner to pay attention to the treatment of the nares and posterior nares with atomizer and alkaline solutions. Afterwards, application to vault of pharynx of 2 per cent. glycerite of iodine by means of cotton on holder. In some cases, a spray of albolene with menthol camphor 2.5 per cent. should be used, and dusting the nares with calomel is recommended where inflammatory trouble is present. The external auditory canal should be thoroughly cleansed by syringing, peroxide of hydrogen being necessary in some cases. The insufflation of boric acid powder advisable in purulent cases, pneumatic massage and Politzer inflation in catarrhal cases, and inunction with yellow oxide of mercury in furuncle or eczema of the auditory canal. G. BACON.

15. Two cases are reported by GRADENIGO, one of a musician, aged twenty-nine, a violinist and composer, who had catarrhal otitis media. No symptoms of disease of the internal ear. The second case was that of a woman, aged twenty-eight, with catarrhal otitis media (both sides) with involvement of the internal ear. The forks c^3, c^4, c^5 were heard double. G. BACON.

16. The results arrived at by DAAE are that double hearing may arise :

I.—From affection of the sound-conducting apparatus.

II.—From affections of the sound-perceiving apparatus.

III.—That in a few cases where double hearing has been declared to depend on affections of the perceiving apparatus, the real affection was in the middle ear, treatment of which caused the double hearing to diminish or disappear.

IV.—That harmonic as well as discordant double hearing may depend partly on affections of the inner, partly on affections of the middle ear. G. BACON.

17. According to GRADENIGO, aural sclerosis due to syphilis affects especially the sound-conducting apparatus, but does sometimes affect the sound-perceiving apparatus as well. The aural affection may be the only evidence of the diathesis, and then the

scribed nodular tuberculosis of the auricle," in addition to three previously observed, are described. Macroscopically these might readily be confounded with fibromata, but microscopically, both from the arrangement of the tissues and the presence of bacilli, their tuberculous character was rendered certain. Moreover, the presence of enlarged preauricular glands pointed to an infective process. Infection from outside is regarded as the most probable cause of the affection. BARTH.

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59. In WELSFORD's patient, a man aged sixty, rupture of both drum-membranes occurred simultaneously as a result of coughing and was followed by deafness, tinnitus, and loss of bone-conduction. SILK.

60. GRADENIGO and PES investigated many cases of otitis media to determine what relation the micro-organisms that act as exciting agents in this disease bear to the course of the latter and how far they are affected by treatment. The latter cannot aim at direct disinfection, but must consist mainly in increasing the resistance of the organism and in securing the self-limitation of the disease. The first thing requisite when suppuration persists is to effect the escape of the pus through the drum-membrane. This must be done under strict antiseptic precautions, and no opportunity for subsequent infection be allowed nor irritation of the parts by the use of the Politzer bag. Following the principles here enunciated, the authors employ the following method. In light cases an abortive treatment (rest, regulation of diet, instillation of a 1 per cent. aqueous solution of carbolic acid) is tried. If the trouble keeps up, a free paracentesis is made without delay. The operation, which is usually performed in the posterior segment of the membrane, is preceded by irrigation with sublimate solution (1.1000) ; but after the paracentesis no washes or measures calculated to produce irritation of any sort are employed, and the only dressing used is a tampon of iodoform gauze. RUMLER.

61. After a most careful examination made in fourteen cases, BLAXALL concludes : (1) That the Streptococcus pyogenes is the most potent of the organisms in the causation of the otitis media of scarlet fever, though rodlike forms may ascend through the

nasal and other passages even before the perforation of the tympanic membrane. (2) That the Staphylococci albus and aureus are next in importance. (3) That however important may be the part played by the Diplococcus and Bacillus pneumoniæ in the causation of other forms of otitis media, they are not often found in the otitis of scarlet fever. SILK.

62. During the winter of 1892–1893 an epidemic of acute otitis media appeared among the troops stationed at Turin. There were 96 cases, 76 of which were uncomplicated, while 17 were associated with broncho-pneumonic processes, 7 with mastoiditis, 1 with parotitis and orchitis, 1 with measles, and 4 with metastatic abscesses. The secretion contained pneumococci. Prognosis favorable. GRADENIGO.

63. HENNEBERT, in a case of acute otitis media (produced by the passage of mucus from the naso-pharynx during the act of swallowing), used with advantage the rarefying apparatus and the injection of paraffin into the middle ear. The rarefying apparatus is useful in otitis when the exudate is hard to get out, and especially in the chronic forms in which the opening is narrow or badly situated ; furthermore, as a means of ascertaining in cases of old otorrhœa whether the discharge has ceased or not. Injections of paraffin per tubam are useful to prevent inflammatory stenosis of the tube, to ameliorate pain, and to check inflammatory symptoms in the tympanum. They may actually prevent perforation taking place. RIPAULT.

64. In commenting upon a case of diabetic mastoiditis relieved by dietetic measures, DAVIDSOHN thinks that diabetes is not the direct cause of otitis media, but simply favors its development. He also believes that otitis media diabetica starts, not in the mastoid process, but in the middle ear, and that the rapid and extensive destruction of bone in this condition is due to the enhanced virulence of the microbes brought about by the presence of sugar in the organism. He is in favor of operating in diabetic cases, and does not believe that the operation should be too long delayed. RUMLER.

65. SCHUBERT'S first case was that of a workman, forty years of age, in whom two abscesses developed in the temporal lobe as a result of an acute otitis media. One abscess was opened, but the other, which lay close behind it, was not diagnosticated and caused the patient's death. It is a remarkable fact that in this case a paralysis of the abducens, for which no cause could be

found, set in very early. The second case was one of sinus-phlebitis following acute otitis media and caries of the petrous bone (probably tuberculous), which was cured by laying bare the carious foci, and by incising and scraping the sinus. The third case was one of pyæmia without sinus-phlebitis, which began with an acute otitis media, produced endocarditis and inflammation of the sterno-clavicular and shoulder-joints, and recovered without the performance of any major operation. KILLIAN.

66. This paper by WINTER and DEANESLEY is a valuable contribution to our knowledge of the subject of cerebellar abscess. Not only is the case itself reported in detail, but Deanesley gives a most careful summary of the twenty-one cases collected by him from the periodicals and text-books of the last ten years. The patient was a boy, aged sixteen, who had been slightly deaf for about six months, but had had no noticeable discharge from his ear until about a fortnight prior to his admission to hospital. The method of operating was that suggested by Mr. Percy Dean, *i. e.*, a disc of bone was removed from over the lateral sinus which was thus exposed, and by enlarging the opening thus made in either an upward or downward direction, access could be obtained to the temporo-sphenoidal or the cerebellar region as desired. In this case the temporo-sphenoidal lobe bulged freely into the opening, but nevertheless no pus could be obtained on passing a trocar into the cerebral substance; on the other hand, although the cerebellum did not bulge, nor present any signs of inflammation or adhesion, a few drachms of pus escaped from a trocar passed forwards and inwards. The patient made a quick and perfect recovery, and was able to get up in the fifth week.

SILK.

67. DRUMMOND's case is that of a patient, aged nine, who was sent to the infirmary with right-sided purulent otitis media, paralysis of the right side, and right-sided convulsions. Although there were distinct traces of fetid discharge from the right meatus, and none from the left, the other symptoms were strongly suggestive of a lesion in the left cerebral region, and the temporo-sphenoidal lobe on that side was accordingly explored, but without definite results, and the patient died in the course of a few days. At the autopsy a large abscess was found in the right lobe of the cerebellum. SILK.

68. That intracranial mischief may remain quiescent and unsuspected for a considerable length of time, is well illustrated by

HARRISON's case. The patient, a young soldier, was admitted into the hospital with an acute attack of otitis media; becoming worse, Harrison operated and succeeded in opening and draining an abscess cavity in the cerebellum. The patient died a day or two after the operation. At the post-mortem there were evident signs of extensive meningitis; the right lateral sinus was occluded by organized lymph, and a piece of necrosed bone, the size of a threepenny piece, and communicating with the mastoid cells, was found on the inner surface of the skull. Although no history of previous attacks of otitis media was obtainable, there can be no doubt that Harrison is justified in concluding that at some antecedent date the patient had had one or more such attacks. but that the resulting mischief had hitherto remained quiescent. SILK.

69. BROCA speaks of the frequency of otitic brain abscesses, the consequent necessity for their proper prophylaxis, the great dangers attending them, and the diagnostic difficulties which they present with regard to their presence and their localization. They are usually found in portions of the temporal lobe corresponding to the site of the middle-ear lesion or in the cerebellum. Surgical interference should always have the mastoid for its starting-point, but should not as a matter of routine include the opening of the cranial cavity. The opening made into the bone and middle-ear should always be free. RIPAULT.

70. KNAPP reports a most interesting case of a child, nine years of age, who had suffered from a chronic discharge from the left ear, and of late with severe headache and dizziness. Hearing in left ear lost; choked disc, well marked, with sharply defined defect of the right half of the visual field in each eye. Brain abscess in the temporo-sphenoidal lobe diagnosed.

Schwartze's modification of Stacke's radical operation was first performed to remove the source of the brain trouble in its whole extent. Skull trephined 3 centimetres behind and 3.5 centimetres above the ear, and much pus evacuated. Rubber drainage tube inserted. In the third week the secretion ceased and the tube was left out. The wound in the mastoid closed, but a large cerebral hernia, containing another abscess which was opened, remained unchanged for about two months. The optic neuritis disappeared, acuteness of sight became normal, but the hemianopsia remained as before. The child made an excellent recovery [and is well at this day, more than a year after the operation.—H. K.].

G. BACON.

71. Buck reports a case of a strong and healthy man, about fifty-four years of age, who had an acute suppurative otitis media following a cold. Symptoms developed which made it necessary to open the antrum, where some softened bone and pus were found. After the operation the pain disappeared at first, but gradually returned. The patient had a chill and there was a noticeable increase in the redness and swelling of the integument covering the lower and posterior part of the mastoid process. The bone in the lower part of the mastoid was chiselled away. It was hyperæmic, but there was no pus. A further operation showed the presence of pus in the immediate wall of the channel for the lateral sinus. Pus escaped from around the sinus. The opening in the bone was enlarged, so that the jugular vein was laid bare from its situation in the sigmoid groove to a point about one inch below the level of the tip of the mastoid process. The styloid process was also exposed. The patient recovered.

Buck concludes his paper by saying that "the persistence of deep-seated pain behind the mastoid process, after the antrum has been opened into and thoroughly drained, is sufficient warrant for making an opening into the sigmoid groove for the lateral sinus; and it is not advisable to wait until the patient has chills, or until the body temperature rises to an appreciable degree, before resorting to operative interference in this direction."

G. Bacon.

72. Moos's first case was a notable one of otitic thrombosis of the lateral sinus. Death from pyo-septicæmia after perforation of mastoid process. According to Moos, this case was a notable one in many respects: in particular on account of the rapid onset of the fever—occurring eight hours after perforation of mastoid, not having been present before; on account of the disproportion between the comparatively low temperature and the great extension of the secondary affections in lungs and kidneys; on account of the absence of carious portions which might transmit the local affection to intracranial parts; and on account of the rapidly fatal course.

The second case deserves notice because of the coexistence of most of the otitic complications (facial paralysis, thrombo-phlebitis, cerebral abscess, and meningitis).

The third case is important on account of the two cerebral abscesses remaining absolutely latent during life until a week before death, as well as of the fact that one abscess was situated in the cerebrum of the diseased side, while the other was in the cerebellum of the healthy side. G. BACON.

73. In JACK's case of septic thrombosis of the lateral sinus, the patient was a man, aged thirty-three years. History of otorrhœa for years, with sudden development of severe pain in the right ear; no tenderness nor redness over the mastoid. Two days later he had a chill with a temperature of 105° F. Operation performed, and the bone over the antrum was found very thick, and the antrum and mastoid cells contained foul-smelling fluid and cholesteatomatous masses, all of which was removed. The patient experienced great relief for seven days. On seventh day he had a chill, with temperature 105° F. and pulse 140. The sinus was exposed by operation and considerable pus evacuated. The sinus was slightly thrombosed, but the thrombus was considered to be of such small amount as not to be likely to become septic or extend to the jugular. The patient died pyæmic four days later. The other cases, with the exception of the osteoma, were those of mastoid disease, in most of which the dura mater or lateral sinus was exposed. They all recovered with one exception. G. BACON.

74. CROCKETT's patient, female, aged fifty-four, gave a history of previous suppuration from the right ear at intervals for fifteen years. The membrana tympani was nearly destroyed. When admitted to the infirmary three weeks later, the appearance of the tympanum had not changed; there was no tenderness of the skull or mastoid, no history of chills. The temperature was, however, 102.5° F. On the third day after admission she had a pronounced chill, with a temperature of 105.5° F. A diagnosis was made of thrombosis of the lateral sinus. Crockett performed a Schwartze-Stacke mastoid operation, and found on the inner table of the mastoid, just over the sinus, two small spots of caries. On enlarging them pus escaped. The bone was removed so as to expose the sinus, which was found thrombosed and bloodless on incision. A thrombus (softened) about an inch and a half long was removed. The sinus was evidently plugged by nature with a firm thrombus. The jugular vein was not tied. The patient made an excellent recovery.

The writer gives notes also of eight cases of sinus-thrombosis observed at the N. Y. Eye and Ear Infirmary. G. BACON.

75. WILSON's cases are: I. *Localized lepto-meningitis.* Male, aged twenty-four. Otitis media suppurativa chronica since

childhood. When first seen by Wilson, Aug. 19, 1891, the patient had been confined to bed six days with severe pain in the right ear and side of head, and had had several chills. Temperature 100° F. He was admitted to the hospital on the following day. On Sept. 1st the right antrum was opened (the patient having had one or more chills every day, with well established symptoms of pyæmia) and found eroded in every direction, through the roof of the antrum to the dura mater, and also through the bony wall of the lateral sinus. At this point the operation was abandoned. Patient died Sept. 11th. Autopsy: Leptomeningitis entirely localized. Meninges soldered together by plastic exudation over roof of antrum and tympanum, also about lateral sinus. Purulent disintegration of a thrombus in the lateral sinus. Considerable erosion of the bone in all directions was found. Infective material also found in lungs, principally the left.

II. *Pyæmia from sinus-thrombosis.* Male aged twenty-eight. Discharge from left ear since childhood. First seen Dec. 20, 1893. Pain in left ear and side of head. Had had chills for a week. Temperature 103° F., pulse 94, respirations 20. Patient died Jan. 2, 1894. No autopsy obtained. Temperature chart shows a typical case of pyæmia. Lungs affected, owing to sinus-thrombosis undoubtedly.

III. *Acute purulent otitis. Death from infective pericarditis.* Patient seen Feb. 29, 1892, a business man, aged forty-five: he had had no previous ear trouble. He had an acute suppurative otitis media. An early paracentesis was performed, followed later by the escape of pus. Subsequently he had localized pain above the auricle, which gradually subsided and for one day entirely disappeared.

It then returned with increased severity, with elevation of temperature to 105½° F., and tenderness appeared in the neck. Cleansing the antrum caused the pain above the auricle to cease and the temperature to fall to 101° F. Four days afterwards death followed from pericarditis, undoubtedly of an infective nature.

IV. *Chronic otorrhœa. Death from basilar meningitis.* Patient, a well nourished man, was seen July 4, 1892. Discharge from right ear for two years, from left ear one and a half years. About five months later, when seen again, he seemed very irritable and angry if restrained. He had chills. Temperature 103° F., pulse

120. He became irrational. Clonic movements of both sides of the face and arms occurred. No redness, tenderness, or swelling over either mastoid. At the autopsy, the base of the cerebrum, the cerebellum, the medulla, and the cord as far as could be seen from above were bathed in pus. The left auditory nerve was a mass of brownish pulp. There was no bony erosion.

V. *Acute otorrhœa: Death from pyæmia.* Patient, male, aged forty-nine. Six weeks before his visit, he had pain in the left ear, followed by discharge. About two weeks later, a swelling appeared under the left ear, which grew to large size, involving the whole left side of neck and mastoid. Abscess opened in the neck and about one pint of greenish fluid was evacuated. The patient had chills and died of pyæmia. No autopsy.

G. Bacon.

76. Coe's patient, aged twenty-five, had previously had severe pain in the left ear for a week or ten days, followed by a free discharge, which continued some days; then chills and high fever, with vomiting and great pain over the left side of the head. An examination showed profuse discharge from the ear with attic suppuration. He improved under treatment, but two weeks later had daily elevation of temperature from one to two degrees, with pain in ear and side of head. The mastoid was opened but no pus was found. The patient's condition improved for a few days but later he had a severe chill with temperature of 105° F. Some ten days later a swelling of the neck along the sterno-cleido-mastoid muscle was very marked, the patient during this time having chills and a temperature as high as 105.5° F. About five days later pus was found in the swelling on the neck. About two ounces of thick, greenish-yellow pus were evacuated, having been contained between the inner border of the sterno-cleido-mastoid muscle and its sheath, and directly over the jugular vein. The patient improved at once until about ten days later, when he had difficulty in moving the right leg. Intense headache confined to the left temporal and frontal regions followed. The temperature was normal, pulse 60 to 70. The paralysis of the leg then became decided and gradually involved the right arm and hand. There were also hesitancy in speech and a loss of memory as to words. Paralysis of facial on right side supervened. An operation for cerebral abscess was performed, the point selected being one and a half inches above and behind the external meatus. The brain was examined in all directions for some two or two and a half

inches but without result. About the twelfth day following the operation, the patient's general condition began to improve and he was soon able to leave the hospital. A slight amount of facial paralysis remained. The patient returned two months later, with intense pain in the head, followed by coma, with unequal dilatation of the pupils, and finally died with symptoms of brain compression.

Autopsy.—Dura normal except over the motor area on the left side, where it was closely adherent; it was greatly thickened and there was considerable inflammatory deposit of a fibrous nature on the cortex. An abscess was found occupying the lower and central portion of the frontal lobe of the left hemisphere. It consisted of two distant sacs, the larger, the size of a hen's egg, having walls of considerable thickness. The cerebral tissues were softened even for some distance from the sac and broke down readily. G. BACON.

77. MOOS reports the case of a robust man, who suffered from scarlatinal otitis in each ear since childhood. The discharge persisted on both sides up to Feb., 1892, when he had an attack of influenza. On his recovery, a fresh discharge appeared in the right ear, but without any pain, and leading rapidly to a tumefaction over the mastoid process, at times larger, then again decreasing spontaneously in size. At one time it disappeared entirely. When examined May 31st, large central perforation found in left *Mt.* Right ear: profuse suppuration, small perforation, *Mt.* congested, mastoid swollen but not painful to the touch. Pressure over the mastoid caused increased otorrhœa. Repeated paracentesis and other treatment proving ineffectual, an operation was performed and the usual incision made over the mastoid, but this was followed by such excessive hemorrhage that tamponning had to be resorted to. No pus being found at a depth of 1.8 *mm* in the bone, operation was discontinued. Up to June 8th, four days after the operation, there was no secretion; but during that evening "abundant discharge from the meatus." The discharge ceased, only to reappear at times though in daily diminishing amount, till June 17th. July 2d: no swelling over the mastoid, no trace of aural suppuration. A painless course characterized this case. The pus enlargement lay at the lowermost end of the apophysis, and a little to the middle line, but the greater part of the apophysis was free from swelling. The mastoid cells contained no pus, and the antrum was probably obliterated. The

reappearance of profuse discharge after several days of quiescence was evidently due to the regurgitation of the pus from the abscess through the squamo-mastoid fissure. Then follow remarks on the squamo-mastoid fissure. G. BACON.

78. CLARKE makes some observations on acute mastoiditis and the importance of opening the mastoid antrum in these cases. In selecting a point for operation Mr. Clarke chooses the small depression behind and above the ridge of bone known as the supra-meatal spine as being very constant in both adults and children. SILK.

79. THORNER gave the history of a case of mastoid disease in a boy aged ten years, and showed the patient before the Cincinnati Academy of Medicine, for two reasons: first, on account of the case being a good type of final results to be obtained by the modern mastoid operation; and secondly, because the time that elapsed between the operation and the complete healing of the wound was unusually short, five weeks and five days.

G. BACON.

80. HESSLER examines the criteria by which Körner differentiates otitic pyæmia with sinus-phlebitis from the form without sinus-phlebitis. The latter, according to Körner, originates from the absorption of pus into the circulation from the primary focus in the ear or temporal bone, when the source of the pus is found in the veins of the bone (osteo-phlebitis) and there is no extensive destruction of bone itself. It is more frequent in acute than chronic aural disease. According to Körner, while in sinus-phlebitis metastases in the lungs are frequent and in other organs rare, in the pyæmia of osteo-phlebitis metastases of any kind are infrequent, and metastases in the lungs almost unknown. Hessler, by examination of literature, confirmed this view of the almost constant presence of metastases in the lungs in sinus-phlebitis. He does not believe with Körner that in osteo-phlebitis the infective material is absorbed directly into the blood, but thinks that it gets first into one of the cerebral sinuses. Hence he thinks that, in addition to securing a free exit for the pus from the middle ear and the mastoid, we must also endeavor to avert the development of thrombosis and phlebitis in the sinus, which are always likely to take place. Hence if the pyæmic symptoms and the metastases do not abate after opening the mastoid and exposing the wall of the sinus, the jugular vein must be ligated. Nine histories of otitic pyæmia are appended; 6 of these were cured.

In 2 of the 3 fatal cases an autopsy was made and in both the evidences of pyæmia due to sinus-phlebitis were found.

RUMLER.

81. SZENES used europhene, alumnol, diaphtherin, and antiseptin (in powdered form) in 86 cases of suppuration in the external canal and middle ear without success RUMLER.

82. HESSLER calls attention to the effect of climate and hygiene upon middle-ear catarrh and suppuration, adducing as an example the differences displayed by country-children and city-children in their liability to these diseases. He emphasizes the importance of pure air in the treatment of these conditions, and points out the proper hygienic precautions that should be taken, particularly in schools. MÜLLER.

83. BAGINSKY believes with Virchow that cholesteatomata are necessarily heteroplastic growths, and with Kuhn that they originate in the course of a chronic suppuration. RUMLER.

84. REINHARD treats cholesteatomata by making a permanent retro-auricular opening, so as to obviate the danger of decomposition taking place in the membranes that are formed. He operates by chiselling into the antrum in the ordinary way, then detaches the membranous canal in its upper and lower parts by means of a raspatory, cuts it across close to the drum-membrane, and draws it out of its bony envelope. The membranous canal thus detached is split in a direction parallel to its long axis and the flaps are attached above and below. The external canal, tympanum, aditus, attic, antrum, and mastoid are transformed into a single cavity, which is kept permanently open both in front and behind. In order to effect this, Reinhard forms a flap from the posterior surface of the concha whenever he finds that cholesteatoma is present. RUMLER.

85. KRETSCHMANN's paper describes his modification of Stacke's operation as he demonstrated it before the German Otological Society in 1893. It contains four illustrations necessary for the understanding of the technique of the procedure.

RUMLER.

86. HOFMANN, a pupil of Kessel's, gives the subsequent course of the cases formerly reported by Müller (*Arch. f. Ohrenheilk.*, vol. xxxii.), and adds 9 new cases, in all of which tenotomy of the tensor tympani was performed for perforations of the drum-membrane. Of the 30 cases operated upon, it was possible to determine the result in 22. In 3 cases, subjective symptoms (including in

1 case a tinnitus which had lasted for years) had disappeared after the operation. The hearing was improved in 15 %, remained the same in 45 %, and in 40 % was lessened. In 3 of the last-named cases the deterioration was attributable to nasal disease. In 8 cases the discharge was arrested by the operation; in 12, relapses occurred, attributable mainly to nasal complications.
RUMLER.

87. ZAUFAL claims to have been the first to carry out in actual practice the principles laid down by Küster for operating upon the middle ear, and which are, that as free an opening as possible should be made in the bone, that everything diseased should be removed, and that the source of suppuration should be so exposed that the pus will have no obstacle to its outflow. He therefore thinks that the operation, being a typical one, should be called after his own name. As early as April, 1890, he had reported 12 cases operated upon in this way. He operates by extirpating the membranous covering of the upper and back part of the osseous portion of the auditory canal, and then exposes the antrum by chiselling into the mastoid and removing the whole posterior wall of the bony canal. He then removes through the antrum the pars epitympanica and performs exenteration of the tympanic cavity. The instrument used is Luer's bone forceps. He lays great stress upon the necessity of removing everything that is diseased, especially in operating for cholesteatoma, and for this purpose the Paquelin cautery is used after the cavity has been scraped out. A permanent opening behind the ear is not made.
RUMLER.

88. FERRERI recommends the employment of a 3 per cent. solution of nitrate of silver before attempting to remove the carious ossicles in otorrhœa. In many cases, he says, the discharge is arrested by this means, and the carious ossicles are spontaneously eliminated. Two case histories are given.
GRADENIGO.

89. BURNETT advises removal of all carious ossicles except the stapes in cases of chronic suppurative otitis media, especially in attic cases; also the removal of all diseased membrane and polypi, so as to allow free drainage. He does not believe in curetting the attic on account of the danger of inducing facial paralysis.
G. BACON.

90. MCDAVITT reports 7 cases, of which 3 were cases of acute suppurative otitis media with implication of the mastoid

cells, requiring the usual mastoid operation ; 1 case of chronic suppurative otitis media, in which the mastoid was opened and a cure finally established ; the remaining 3 cases were old suppurative cases, requiring either removal of all granulations or excision of the drumhead and ossicles. The writer believes that, "if after a thorough cleaning out of the middle ear and the scraping of diseased tissue from the attic the discharge still continues, it may be advisable to open the mastoid for drainage."

G. BACON.

91. BARCLAY reports cases of chronic purulent otitis media where the discharge ceased and disagreeable symptoms disappeared after treatment consisting in the removal of polypi, and excision of the drumhead and ossicles. G. BACON.

92. DENCH reports a number of cases in which operative measures were undertaken, some performed under general anæsthesia and some under cocaine. From his statistics he concludes "that the greatest improvement has followed those operations performed under cocaine-anæsthesia, and where the design has been to secure a permanent opening into the tympanum. This seems to be the most rational procedure in all cases, even where the membrana tympani is intact, and since it can be done without general anæsthesia, we are certainly warranted in recommending at least an exploratory tympanotomy in all cases where the hearing has failed to improve under less radical measures. In no given case can we state the amount of improvement which we should expect, and it is always our duty to inform the patient of the experimental character of the measure." With regard to cases operated on primarily for the relief of discharge, only a few have been included in this paper. In fifty of these cases, operated upon, however, the function of hearing has been impaired in but one. G. BACON.

93. BURNETT gives the name of chronic tympanic vertigo to those cases of chronic catarrh of the middle ear where vertigo of a chronic nature is added to the tinnitus and deafness already present. He considers that the best means of relieving this troublesome symptom is accomplished by removing the incus, and thus relieving the pressure upon the stapes, and he reports a series of cases in support of this theory. G. BACON.

94. According to GELLÉ the stapes after inflammation of the middle ear is often inclosed in hypertrophies of the mucous membrane, and may then be liberated by operation. In other cases

the drum-membrane, owing to the presence of old fungosities, retracts and carries the stapes with it. In otitis sicca, again, the stapes is imbedded and most firmly fixed, and then mobilization or extraction (according to Kessel's method) is advisable. When the round window is obliterated, the stapes immovable, and the oval window inaccessible, the hearing is abolished. When the stapes becomes once more movable, the hearing returns, the capacity for appreciating sounds by bone-conduction is restored, and the tinnitus disappears. A renewed infection (*e. g.* from grippe) abrogates the hearing completely. Multiple deep incisions down to the bone are required. Chromic acid may also exert a favorable effect in ostitis and periostitis of the inner wall.

RIPAULT.

95. As a result of his experience for the last two years, JACK concludes: (1) that the best results in hearing have been obtained in cases of early removal of the bone, and this operation is not advisable in cases of otitis media insidiosa (sclerosis); (2) that cases of chronic aural vertigo have been permanently relieved by liberation of the stapes or by spontaneous expulsion of the bone; (3) that in cases of non-suppurative disease of the middle ear, as well as the class of cases which are the result of a chronic suppurative process, surgical mobilization should first be tried before an attempt is made to remove the stapes; (4) that most operations for mobilizing the stapes or freeing the oval window must be looked upon as largely experimental, and that in many cases a fracture of the crura occurs at the time of attempted expulsion, leaving the base plate. G. BACON.

96. The following are the deductions made in HEFLEBOWER's paper: 1. No bad results attend the excision of the malleus and the incus, but removal of the stapes is not without the most serious danger, both to life and hearing. 2. That the removal of the malleus and incus alone is far preferable to the removal of the stapes. 3. The operation is of extreme service in chronic suppuration in suitable cases, frequently avoiding m stoid and other serious disturbances of an equally serious nature. 4. It should be performed in cases where there is a high perforation or where the membrana flaccida is perforated, and where the ossicles are necrotic. 5. Tinnitus, headaches of ear origin, and vertigo are relieved. 6. In suitable cases it is invaluable for relieving deafness, whether from chronic suppuration or from chronic catarrh and sclerosis. G. BACON.

97. LAUTERBACH prefers systematic pneumo-massage in the treatment of non-suppurative cases, and does not advise or recommend removal of the ossicles except as a *dernier ressort.*

G. BACON

98. WÜRDEMANN advises a combination of massage and the vapor treatment in the majority of cases of aural catarrh : vibratory massage through the catheter and Eustachian tube. A compressed air apparatus is necessary. Compressed air passes through the medicating apparatus (vaporizer), and is conducted to the mouth of the catheter by gum tubing. The air valve is then turned on at required pressure (about 15 to 25 lbs.) and the tubing at the catheter compressed by the thumb and forefinger, producing an interrupted current, thus applying massage to the tube and middle ear. G. BACON.

99. KUHN removed from a one-year-old boy a myxo-sarcoma that sprang from the middle ear and presented externally through the external auditory canal and also through a fistula beneath the tip of the mastoid, which it had reached by burrowing through the posterior wall of the canal. The patient died from a recurrence. Kuhn thinks that the tumor originated in the cushion of connective tissue existing in the wall of the labyrinth and in which are found at birth gelatinous masses consisting of embryonic connective tissue with spindle-shaped and stellate cells imbedded in a structureless jelly-like matrix. NOLTENIUS.

100. The fibroma of the tympanum in COZZOLINO's case was remarkable on account of its size. GRADENIGO.

101. In KÖRNER's case of tuberculosis there was destruction of various parts of the temporal bone including the tegmen tympani. At the latter spot the dura was thickened and covered with granulations containing spiculæ of bone. In one place the dura was adherent to the brain, and both it and the latter contained caseous nodules. The upper lobes of the lungs were tuberculous.

KILLIAN.

102. In two cases observed by KÖRNER, a pediculated exostosis, about the size of a hemp-seed, was found near the spina supra meatum. Both patients had previously had discharging fistulæ opening behind the ear, and Körner believes that the exostoses may have been formed at the spot where the pus had originally perforated the periosteum, being produced by the irritation set up in that quarter by the discharge. KILLIAN.

103. HAUG is a pronounced advocate of the view that hyper-

ostosis of the petrous bone constitutes a direct danger for its possessor, and a very unfavorable complication of other morbid conditions. Hyperostosis of the temporal bone is peculiar in this regard, that the parts are not all uniformly affected; the greatest thickening usually affecting the mastoid, and frequently also the auditory canal, while thickening of the petrous portion is less common. The pus and other secretory products formed in these cases break through in the direction of least resistance, *i. e.*, into the cranial cavity, Osteosclerosis develops after otorrhœas which have lasted a long time. From his own investigations Haug believes that it does not occur after acute or chronic processes of a simply catarrhal nature. He draws his conclusions from one case upon which an autopsy was performed, and thirteen cases which underwent operation. Osteosclerosis renders the spontaneous cure of a middle-ear suppuration impossible, enhances greatly the difficulty of operating, and throws many obstacles in the way of making a diagnosis. RUMLER.

INTERNAL EAR AND AUDITORY NERVE.

104. GRADENIGO. Hemorrhage into the cochlea. *Archivio ital. di otolog.*, etc., 1894, p. 512.

105. LUZZATI, A. Contribution to the study of the static sense in healthy subjects and in those affected with aural disease. *Ibid.*, p. 383.

106. CURNOW, J. Auditory vertigo caused by working in compressed air. *Lancet*, Nov. 10, 1894.

107. BARON, B. J. Four cases of labyrinthine disease treated by injections of pilocarpine. *Brit. Med. Journ.*, Dec. 1, 1894.

104. GRADENIGO saw three cases in which the symptoms indicated the existence of hemorrhage confined to the cochlea. In two cases there was a history of injury. In none were there any symptoms of vertigo. GRADENIGO.

105. LUZZATI'S experiments were made with an improved form of Stein's apparatus. The affections of the ear in which static disturbances are found are those in which the galvanic reaction of the auditory nerve is readily induced. They indicate a disease of the inner ear or of the auditory nerve.

GRADENIGO.

106. CURNOW'S case was that of a man in whom auditory vertigo set in one hour after he had finished his work in the

Blackwall tunnel, where he had been exposed to a pressure of 2½ atmospheres. No evidences of involvement of the middle ear were present. A three weeks' stay in the hospital produced no improvement. SILK.

107. Of four cases of aural vertigo treated by repeated injections of pilocarpine, two were in no wise benefited. In a third some improvement was noticed in the hearing some months after the injections had been stopped, although the immediate effect of the latter was to produce vertigo and vomiting. In the fourth case the hearing was improved and the vertigo lessened, but the tinnitus remained. BARON believes that the treatment is advisable as a last resort in hopeless cases of internal ear disease.

SILK.

NOSE AND NASO-PHARYNX.

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113. DUNN, J. Vomiting directly after meals. *N. Y. Med. Journ.*, Sept. 22, 1894.

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118. SCHWAGER. Upon cavernous angioma of the nasal mucous membrane. *Arch. f. Laryngol.*, vol. i., part 1.

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108. ZWAARDEMAKER, in discussing the diagnosis of nasal stenosis by means of the respiratory spots, warns us not to base too positive conclusions as to the location of the stenosis upon an asymmetry in the spots. He tries to show that the method is applicable for diagnosticating bilateral stenosis, and speaks of the possibility of making out paralyses of the soft palate by means of this method. ZARNIKO.

109. GRADENIGO tests olfaction by Zwaardemaker's method, and believes that this may furnish important data for the diagnosis of the stage of chronic catarrh when the objective examination fails to do so. GRADENIGO.

110. CHAPPELL reports four cases of vasomotor rhinitis occurring in patients with chronic malaria which promptly yielded to quinine. TOEPLITZ.

111. STRAIGHT'S case was that of a man, aged thirty-five, who suffered for two years and a half from attacks of vasomotor rhinitis, which came on suddenly and occurred summer and winter about every two weeks, each attack lasting nearly two days with excessive sneezing and discharge, but without asthma or constitutional symptoms, and without trouble during the intervals. There was no morbid nasal condition. Every kind of treatment, including cauterization with chromic acid, had been without avail. Finally, superficial cauterizations of the lower turbinates with the galvano-cautery led to speedy recovery.

TOEPLITZ.

112. WOLFE lays stress upon the neurotic habit in patients suffering from hay-fever, and claims that, if the treatment is early directed against it, viz., beginning two months before the approach of the disease, the cases are positively cured. He uses Bosworth's belladonna and zinc-phosphide combination for this purpose (pills containing each $\frac{1}{6}$ gr. phosphide of zinc and $\frac{1}{4}$ gr. belladonna). In badly nourished patients, $\frac{1}{40}$ gr. of arsenious acid is added to each dose of the above prescription.

TOEPLITZ.

113. DUNN reports the cases of three adults who were frequently seized with spasmodic coughing spells, vomiting after breakfast, and a constant effort at clearing their throat. Two of

these cases were cured by the removal of a relaxed uvula, treatment of nasal hypertrophy and deviated septum ; the third case by the removal of swollen papillæ circumvallatæ which rubbed against the normal uvula. TOEPLITZ.

114. **BLAIR** argues against Greville McDonald's views expressed in his treatise on nasal asthma, which tend to refute the reflex theory. Nasal obstruction causes nerve irritation, but exposed "nerve points" may exist without obstruction. The "points" are acted upon by offending substances (idiosyncrasies). The treatment should not only remove the local causes, but also restore the tone of the weakened nerve-centres. Two cases illustrate that recovery can thus be looked for even in affections of long standing. The prognosis is not unfavorable in the latter, unless permanent damage has been done to the nervous system or to the air-passages. TOEPLITZ.

115. **DMOCHOWSKI**, in 64 autopsies upon persons dying of tuberculosis, found tuberculous disease of the nasal mucous membrane in 21. This involvement was especially frequent in acute miliary tuberculosis (6 out of 9 cases). The lesion in every instance was one of those extensive, destructive ulcerations which one is apt to regard as constituting the primary affection in this disease. The nasal mucous membrane is a place to which infective germs, whether entering during inspiration or thrown out with the sputum, are particularly liable to adhere.

116. **CHIARI** reports six typical cases of tuberculous tumors of the nasal mucous membrane. Tubercle bacilli were found in four, but all exhibited the typical histological character of tuberculous growths. From these cases and nine others, collected from literature, he gives a clear and comprehensive account of the clinical picture of this disease. He regards it as distinct from lupus. ZARNIKO.

117. **CLARK** reports a mixed sarcoma, probably melanotic, occurring in a woman aged seventy-nine, and which, in two years, developed from a small, hard swelling of the left lower turbinated body to an extensive ulcerated, friable growth, involving the septal surface of the other nostril, the pre-maxillary fossa, and the face of the same side. TOEPLITZ.

118. **SCHWAGER** describes the characters of cavernous angioma of the nasal mucous membrane. This occurs as a circumscribed dusky or bluish-red tumor, which cannot be completely indented by the sound, and subsides but little under cocainization.

It is found only upon the inferior turbinate and the septum. Profuse bleeding is regularly produced when it is removed by snaring. It consists of venous vessels, which increase in number and size from without inward. The superficial vessels have a regular, round or oval lumen, the deeper are irregularly shaped. In places the vessels may be seen to anastomose. Schwager differentiates cavernous angioma from telangiectatic tumors, which are produced by the simple dilatation of pre-existing vessels ; yet tumors of this latter class form the preliminary stage in the development of cavernous angioma, and many intermediate forms exist between the two. ZARNIKO.

119. Under the name of turbinal varix WINGRAVE describes that form of hypertrophic rhinitis which is characterized by a permanent distension of the venous sinuses of the inferior turbinal body. He maintains that not only do muscle fibres exist in the walls of the sinuses, but that it is to the morbid changes occurring in these fibres that this particular form of vascular hypertrophy is due. With regard to treatment, Mr. Wingrave recommends removal by means of the ring-knife. The paper is supplied with numerous figures, representing both the macroscopic and microscopic appearances of the diseased structures.

SILK.

120. CHAPPELL's treatment for sycosis and eczema of the introitus narium consists in the application of solutions of nitrate of silver of from two to ten per cent., assisted by the following ointment: Acid. carbol., gr. ij ; acid. tannic, gr. iij, mixed with benzoïnol, ℥ ss., and ung. zinc. oxid. ad. ℥ i. The average time of treatment required for the nine appended cases was about five days. TOEPLITZ.

121. According to CHAPPELL, apart from nasal obstructions and pharyngeal hypertrophies, naso-pharyngeal catarrh depends on hereditary constitutional dyscrasias, such as the syphilitic, tuberculous, and rheumatic, and on acquired dyscrasias, derived from the digestive tract. The syphilitic cases are treated with the liquor arsenici et hydrargyri iodidi, the tubercular with cod-liver oil, the rheumatic with ointments of carbolic acid and camphor externally, and belladonna, quinine, and camphor internally. In the digestive cases the stomach should be treated. Chappell reduces hypertrophic gland tissue with crystals of carbolic acid and iodine āā 120 grains, dissolved in two drachms of alcohol. The dropping of mucus is stopped by powder containing nitrate of silver. TOEPLITZ.

122. DELAVAN argues against the growing evil of the cocaine habit, formed in physicians and patients, by prescriptions and patent medicines, and he urges that the careless use of the drug be discontinued. TOEPLITZ.

123. DALY says that galvano-cautery should be used for the removal of real nasal hypertrophies and for restoration of nasal breathing, but not for the cure of conditions too remote from the nose. In order to obviate its dangers, particularly to the ear and even to life, it should not be employed needlessly, and only by the expert and cautious rhinologist. TOEPLITZ.

125. GOMPERZ records a case, so far unique, of a fatty tumor, the size of a cherry, starting from the point of insertion of the triangular cartilage into the nasal bone. KILLIAN.

126. GOLDSTEIN, after giving an exhaustive synopsis of the details contained in literature regarding the histology, classification, and statistics of nasal polypi, agrees with Hopmann in the opinion that these growths are not very infrequent under the age of ten. In the Königsberg clinic, five such cases occurred out of a total of seventy-five cases observed. ZIMMERMANN.

127. Electrolysis, according to HESS, is a suitable means of removing septal spurs and deflections in cases where the obstruction is not very great, and where (as in phthisical cases) the reaction after a more violent radical operation might be prejudicial. It may most advantageously be employed in the case of small spurs and anterior thickenings of the septum. Hess prefers the bipolar method, using a current strength of ten to fifteen milliampères,and increasing and diminishing its strength very slowly. The sensations of the patient may replace the galvanometer as a measure for the strength to be employed. The sittings last from three to ten minutes, and the intervals between them should be eight to ten days. The reaction is slight, bleeding infrequent, and no after-treatment is necessary. Hess states that in Falkenstein marked reaction after the galvanocautery is rare, a result doubtless attributable to the pure air in which the patients there live and their comparative immunity from the danger of infection. MÜLLER.

128. ZIEM recommends a nasal saw worked by a rotation apparatus, for operating upon a deviated septum. KILLIAN.

129. ANTON has been able to collect thirteen cases of occlusion of the posterior choanæ in addition to the twenty-five cases published by Schwendt. Anton's case was that of a man, twenty-one years of age, who for nine years had noticed that he could

not blow through the right side of the nose. No trouble except some dyspnœa and complete absence of smell in the affected side. The bony plate was perforated by means of a dental engine, and three months later, on opening, six to seven *mm* in diameter still remained. The sense of smell was not restored. RUMLER.

130. HOPMANN believes that ozæna is a disease *sui generis* and holds to Zaufal's view that abnormal width of the lumen of the nose is its prime determining cause. This abnormality again he regards as due to an arrest of development originating during fetal life and perhaps dependent upon fetal rhachitis. He also ascribes an important part in the development of ozæna to inflammatory processes. In order to substantiate these views, he alleges the result of measurements made in the nose and naso-pharynx. Denoting the total length from the tip of the nose to the posterior wall of the naso-pharynx by 100, he found that the ratio between the antero-posterior length of the nasal cavity and antero-posterior diameter of the naso-pharynx was in 40 cases of ozæna as 71.29; in 27 with rhinitis sicca, as 77.23; and in 61 patients with other nasal affections or with normal nasal passages, also as 77.23. "In simple ozæna, therefore, the length of the septum from before backwards is generally considerably less than normal, and conversely the depth of the naso-pharynx is appreciably above the normal." ZARNIKO.

131. Following is a synopsis of TISSIER's paper on atrophic rhinitis. *Etiology:* The disease may be localized (especially upon the lower turbinate or the septum); then usually due to compression (tumors, spurs),or to inflammation with vascular changes. Or it may be generalized, in which case its distribution is not generally uniform. This variety occurs in old people, or as a result of ozæna which has run its course, or in syphilis. *Pathological phenomena:* Cirrhosis with pigment changes (xanthosis, general or localized, due to altered blood-pigment and resulting from previous hemorrhages); ultimately pallor and thinning of the mucous membrane. *Symptoms:* Appearance like that of a serous membrane; resistance to the sound; absence of vascularity. In the localized form, subjective symptoms but slight; in the generalized form, much annoyance from numerous adherent crusts unassociated with lesion of the mucous membrane. Constant concomitants are retropharyngitis sicca and chronic laryngitis; aural affections and nervous disturbances frequent. Fetor need never be present, if the proper treatment is used.

Treatment: A cure impossible in the generalized form; as mitigating treatment, salt baths, insufflations, and balsam of Peru may be used.

The author also speaks of ***atrophy of the anterior portion of the septum.*** Its stages are: (*a*) that of hyperplasia, associated with frequent epistaxis and the formation of crusts upon the septum at the anterior orifice of the nose; (*b*) that of retrogression, marked by pallor and thinning of the mucous membrane; (*c*) that of fibrous transformation, marked by atrophy and great anæmia of the mucous membrane, disappearance of the glands, and sometimes perforation of the septum. Treatment consists in the use of salves and cauterization to prevent epistaxis.

RIPAULT.

132. GIBB advises, after thorough cleansing of the nasal cavities by antiseptic detergent solutions, cotton wiper, and peroxide of hydrogen, and of the naso-pharynx with the post-nasal syringe or atomizer, the use of zinc stearate incorporated with europhene 25 per cent., on account of the tenacity with which it adheres to the mucous membrane. He claims, in a total of 32 well observed cases, to have thus caused complete disappearance of odor and crusts in 27, and a promise of restoration of normal structure in 2 of these cases, whilst in the remaining 5 the result was doubtful, though the improvement was quite marked. TOEPLITZ.

133. MORF's general conclusions are: That chronic atrophic catarrh attacks chiefly young people, and women are more often affected than men; the secretion in 90 % of the cases is fetid, and a unilateral disease is extremely rare. Disease of the middle and inner ear is a frequent complication; pathological alterations in the drumhead without deafness are rare. The middle-ear disease is generally the consequence of disturbed tubal ventilation.

G. BACON.

134. STEPANOW describes with extreme precision and thoroughness the course and the pathological changes found in a case of scleroma. Special regard is paid to the changes found in the nasal mucous membrane in the earliest stages of the disease. It is stated that in the later, or fibrous stage, the determination of the presence of bacteria, and hence the establishment of the diagnosis by the microscope, may be very difficult. KILLIAN.

135. GERBER believes that microbes constitute the regular and essential constituent of nasal calculi, and that, moreover, the most various forms of microbes may be present in these concretions.

KILLIAN.

136. **Burger** gives a very precise and exhaustive account of empyema of the maxillary antrum. While laying stress upon the unilateral character and periodicity of the suppuration as a means of diagnosis, he thinks that the latter must, in the main, be made from a careful examination of the nose. In regard to the latter, he has not been able to confirm the existence of the laterally disposed tumefaction of the mucous membrane described by Kaufmann, but finds the chief diagnostic point to consist in the fact that pus is present only in the region of the ostium maxillare, or, in certain cases, only when the patient assumes the attitude described by Fränkel. The diagnosis is sometimes corroborated by the discovery of secondary polypoid or granulation growths, or of a concomitant dry catarrh. Transillumination forms an essential aid to diagnosis, especially from the subjective luminous sensations that it affords. In doubtful cases an exploratory puncture should be made. The paper closes with a brief and very clear summary of the points establishing the differential diagnosis. ZIMMERMANN.

137. According to **Bresgen**'s experience, suppuration rarely springs from the general surface of the nasal mucous membrane but usually from some localized spot of disease. He distinguishes two varieties of nasal suppuration. One is produced by contact with gonorrhœal pus (this mainly in the new-born from infection during birth, but also occurring in adults) or other purulent matter, and also occurs in the second period of acute coryza. The other variety, in which there is marked implication of the accessory cavities, forms one of the symptoms of some acute infectious disease, and particularly of measles, scarlet fever, influenza, and diphtheria. A third but comparatively small group is constituted by the suppurative diseases of the maxilliary antrum due to dental caries. Bresgen describes briefly the symptoms of suppuration in the nose and goes exhaustively into the diagnosis. He shows how important it is to employ ocular inspection when cleansing the parts, as it is only in this way that it can be ascertained whether a diffuse or circumscribed suppuration is present, and where the latter is situated In order to determine this point Bresgen makes use of the different positions of the head, and, in the case of the maxillary and frontal sinuses, of transillumination. He also employs exploratory puncture or incision and the sound, the latter especially in diseases of the ethmoidal and sphenoidal cells, a portion of the middle turbinate being removed if

necessary; for localized suppuration originating in the upper region of the nose may arise from simple swelling of the deeper portions of the mucous membrane without there being any implication of the sinuses. In his experience the starting-point of ozæna is generally some circumscribed local affection, and in this regard he considers affections of the accessory sinuses as much more important than diseases of the bone which he finds much less often than does Grunow. Bresgen's treatment consists mainly in a very free operative exposure of the diseased area, and in the case of the accessory cavities the introduction of hexethyl-violet. MÜLLER.

138. KRECKE describes a case of empyema of the frontal sinus of which the main features were suppuration lasting fifty years, rupture externally a year and a half previous to examination, with the formation of a fistula, and exophthalmus. A free opening was made, when the cavity was found dilated to the size of a hen's egg, its mucous layer being transformed into a connective-tissue membrane nearly or quite 4 *mm* thick. Death occurred on the fourteenth day from meningitis due to an abscess of the brain which had given no symptoms. Krecke thinks that when the mucous membrane of the frontal sinus is altered, as in this case, treatment through the nose is impossible, and a free opening should be made from the outside. That is, empyema of the frontal sinus (and of the maxillary antrum too) should be treated like empyema of other cavities with rigid walls, *e. g.*, like pleural empyema or the suppuration of osteomyelitis, in which one wall of the cavity is completely removed so that the cavity can be obliterated. He operates by making an incision along the supraorbital margin as far as its outer third, stripping up the periosteum above and below, and removing the whole anterior and, if necessary, a portion also of the inferior wall. The mucous membrane is scraped off with a sharp spoon. He does not think it necessary to dilate the passage into the nose. He packs with gauze, renews the dressing after five or six days, and after that every fourteen days. Duration of treatment two to three months. Disfigurement very slight. Krecke believes that a free opening made in this way is a perfectly certain and by no means serious curative procedure. MÜLLER.

139. WINCKLER's paper is a criticism of Schäffer's method of getting into the frontal sinus by making an opening to the median side of the middle turbinate and by sounding. Winckler exam-

ined the anatomical relations in 33 cadavers. In rather more than half of these it was possible to make an opening in the way indicated by Schäffer, but in only one sixth of the male patients and in less than one fourth of the females could a sound be introduced from the nose into the sinus. Winckler further finds that no conclusions can be drawn from the external configuration of the head as to the extent of the sinus or the thickness of its walls; moreover, as Winckler shows, the lower wall of the sinus is frequently a thick, solid plate of bone, and then the trephine is apt, instead of piercing the latter, to perforate the ethmoidal plate and enter the cranial cavity. ZARNIKO.

140. The patient whose case FINK describes had, since he was twelve years of age, suffered from recurrent mucous polypi in the right nasal cavity. At the age of thirty-three the upper jaw began to bulge, and three years later violent pain set in. Upon opening the antrum through the alveolar process, Fink found soft solid masses filling the cavity. Displacement outward of the zygomatic process and swelling of the glands in the neck soon followed. A radical operation for scooping out the cavity was then performed and carcinomatous masses were removed. A few days later evidences of metastasis in the fifth cevical vertebra developed, and six weeks later the patient died. Fink assumes, quite gratuitously, that in this case there was at the outset a benign tumor of the antrum which subsequently underwent malignant transformation. ZARNIKO.

141. JANSEN ascribes the difficulty of securing a cure in chronic empyema of the accessory cavities to: (1) The obstinacy with which cavities surrounded on all sides by rigid walls resist treatment. (2) To the fact that the empyema frequently affects adjacent cavities and that these produce mutual re-infection. "Serious disease of all the accessory cavities," he says, "is by no means so rare. Thus in seven patients with empyema of the frontal sinus, upon whom I operated last year, I found the ethmoid bone affected in all and the maxillary antrum in six; in two the empyema was bilateral, and in one case I also encountered suppuration of the sphenoidal cells." As another factor (3) he adduces narrowness and unfavorable location of the natural channels of outflow, which, moreover, are frequently blocked up by swellings or granulations. Still another obstacle to the cure (4) is found in the presence of extensive pathological processes, such as very large accumulations of granulation tissue

containing foci of pus encapsuled in them, or extensive carious processes in the bony walls with large defects or sequestra. On account of all these conditions Jansen believes that those who think that they have cured a chronic empyema of one of the accessory cavities by simple irrigation are either mistaken or have not waited long enough to be certain that relapses have not occurred. [In answer to this it may be said that any one who has treated cases of empyema of the accessory cavities either by simple irrigation or by extracting the teeth or perforating the cavity-walls, knows that these diseases often get permanently well, and that too with remarkable celerity. Hence when Jansen recommends a radical operation for all cases, we can only pronounce against his opinion—HARTMANN.] Jansen, on account of the unfavorable prognosis afforded by the methods of treatment hitherto pursued, adopts procedures more radical even than those of the most radical recent operators. His methods are as follows :

A. *In the maxillary antrum.* After detaching the periosteum he removes the whole anterior wall except the portion containing the infra-orbital foramen, which is retained on account of its vessels and nerves. The cavity is scraped out, sequestra, etc. are removed, and a flap of mucous membrane obtained from the alveolar process and from the lips is inserted. The cavity is packed with iodoform gauze and the dressing changed every day or two. After one or two weeks a rubber obturator is inserted, which is attached to an artificial plate or to a sound tooth. This has the object of keeping the wound open and preventing the growth of granulations. The after-treatment lasts often as much as two years, but in great part may be carried on by the patient himself.

B. *In the frontal or ethmoidal sinuses* (which, as above stated, were found to be simultaneously affected in all the author's cases). A curved incision is made running beneath the eyebrow from the external margin of the orbit to the side of the root of the nose at a point below the palpebral fissure ; the periosteum is detached from the lower wall of the frontal sinus, and the floor of the latter removed as far as the root of the nose and the excretory outlet of the sinus. When the sinus is large a strip of its anterior wall, ¼–½ *cm* high, is also removed. The sinus and all its ramifications are cleaned out, and then the same process is gone through with for the ethmoid cells, which are got at from the frontal sinus by removal of their lower wall, which separates them from the orbital and nasal cavities. [Operation already recommended by Grünwald.—ZARNIKO.] Care must be taken not to injure the contents of the spheno-maxillary fossa. It will often be possible and in doubtful cases the attempt should always be made to enter.

C. The *sphenoidal sinuses* from in front and scrape them out. In cases of combined empyema, Jansen first opens the frontal and ethmoidal sinuses, and operates upon the maxillary antrum at a second sitting. In bilateral disease he advises against operating upon both frontal sinuses at the same time.

Remarks on the diagnosis of disease of the accessory sinuses and the detailed histories of seven cases complete this paper.

ZARNIKO.

142. In MACKENZIE'S case, a woman aged thirty-five, who had suffered from otalgia, also from a furuncle of the external auditory meatus and an abscess of the lobe, antral disease was recognized in January, 1889, but was not operated upon before 1892, when, after extraction of the second molar tooth, the floor of the antrum was perforated with a large drill. After the opening had persisted for two years, shreds of false membrane began to come away, varying in length up to that of an index finger. The membranes contained Aspergillus fumigatus. The mode of infection is obscure.

TOEPLITZ.

143. BOSWORTH, in discussing ethmoidal diseases, says that they differ anatomically and symptomatically from those of the other accessory sinuses: anatomically, since the ethmoid sinus is composed of a number of cells instead of one cavity; symptomatically, in the presence of intermittent neurotic and ocular symptoms and of so-called aprosexia. A large number of cases of so-called acute rhinitis are really cases of acute ethmoiditis, and other instances of the latter are due to influenza. The acute form may end in resolution or become chronic. In the chronic form an extra-cellular or intra-cellular myxomatous degeneration is set up, or suppuration ensues. The polypi formed in the former way will push the outer wall of the cells against the middle turbinated body and the latter, which may also be in a state of polypoid hypertrophy, against the septum, so as to render the diagnosis of the condition quite feasible. The suppuration may either discharge from the anterior cells through the hiatus semilunaris into the anterior nares below the middle turbinated body; or from the posterior cells and sphenoidal sinus through the superior meatus between septum and middle turbinated body into

the posterior nares; or, finally, through the os planum into the orbital cavity. The treatment consists for the acute cases in the use of hot saline irrigations by means of the Thudichum douche, applied with the ordinary precautions. For the chronic cases without suppuration, the removal of the hypertrophied middle turbinated body is indicated; in those with suppuration, opening of the cavity is performed, in addition. For this purpose the small dental burr is preferred to the curette. Among the 97 cases of ethmoidal disease observed by Bosworth during five years, there were 3 carcinomata and 4 sarcomata. The ages varied from the second to the seventh decade of life—the middle decades being those most frequently attacked; 61 were males, 32 females; 15 were inflammatory, without polypi or suppuration, 9 of which were cured, 3 improved; 29 showed polypi without suppuration, and of these 12 were cured and 10 improved. Of 22 cases of polypi with suppuration, 9 were cured and 10 improved. Of the 27 purely suppurative cases, 8 were cured and 12 improved, nearly all of these being operated upon by snare or drill. [It would have been of great interest to know in just how many cases the drill was used and with what result.—REVIEWER.]

TOEPLITZ.

144. HAWKES's patient, aged twenty-eight, suffered from headache for twenty years, which dated back to a fall on a curbstone that cut the upper right quadrant of the forehead, about an inch above and parallel with the supra-orbital ridge. The cut had suppurated and was slowly healed. The headaches were practically continuous. The slight depression of bone, not over half an inch in length, was removed by a trephine as a disc of three quarters of an inch in diameter. During the three years that had elapsed since the operation, the patient had had no headache.

TOEPLITZ.

145. According to KING, diseases of the accessory cavities are of dental, nasal, or constitutional origin. The last-mentioned are very rare; the first-mentioned are more frequent, but are confined to Highmore's antrum. Transillumination, except for diagnosis, of pus in the frontal sinus, cannot as well be depended upon, as abstraction of pus from the cavities by aspirators; for frontal cases, drilling through the outer skin is preferred. The prognosis is doubtful as to complete recovery, and spontaneous resolution never occurs. The antrum will never become normal; the other sinuses only after long and radical treatment. King's three fully

reported cases bear out this statement ; the two antrum cases were considerably improved, but not cured after long treatment ; the frontal case was cured three weeks after operation.

TOEPLITZ.

146. WÜRDEMANN'S patient, a girl aged seven, was operated upon for empyema of the antrum of Highmore by incision of the lower lid and by drilling through the alveolar process above a molar tooth. Rapid recovery. TOEPLITZ.

147. DUNN'S patient, a female, aged fifty-three, suffered from double proliferating ethmoiditis, principally of the anterior ethmoidal cells, nasal polypi, hypertrophies of the middle turbinates of both sides, and deflection of the septum. The inner wall of the antrum of the left side was bulging toward the nasal cavity, which was filled with pus. The left cheek was swollen by an elastic tumor which, after destruction of the outer maxillary wall, attached itself to the cheek bone above the gums and extended into the mouth from the first bicuspid backward and upward. It was of the size of a pigeon's egg, and offered little resistance to the bistouri or probe, but contained no pus. An attempt at radical removal failed on account of its extension beyond the antrum and infiltration of the tissues of the neck. The tumor was a carcinoma. The patient died soon after operation. Dunn believes that this case proves the assumption that a benign myxofibroma can be transformed into a carcinoma, which here originated in the walls of the antrum, the mushy, velvety, thickened feel of which suggested this view. TOEPLITZ.

148. FRANK'S and KUNZ'S case was that of a man, aged twenty-eight, with hereditary tuberculous taint. Symptoms : pressure across the forehead, painful swelling over the right frontal sinus with subsequent swelling of the upper lid, the right eye being slightly pushed downward, and fluctuation being present over the lachrymal gland. Through an incision extending from the glabella to the external angular process, a quarter of an inch above the eyebrow, the sinus, by chiselling of the roughened bone, was opened and found to be filled with a yellowish cheesy mass. A carious focus on the posterior bony wall was curetted, thus all but exposing the dura mater. From the right lower angle of the sinus a small channel led from the carious focus on the inner surface of the bone to the fluctuating mass of the upper lid, which contained a drachm of pus. The entire supra-orbital arch was found to be diseased. It was chiselled away and scraped.

The nasal cavity was also curetted through the sinus. Recovery took place on the eighteenth day after the operation. A complete bibliography, comprising 95 cases collected from the *Index Medicus*, is appended. TOEPLITZ.

149. EATON reports a case in which a tumor existed for three years over the right eyebrow of an Italian, aged twenty-six, together with large polypoid hypertrophies of the middle turbinated bodies, particularly of the right, upon the removal of which an abundance of fluid escaped from the nostril. The removal of the frontal-sinus tumor from without, with daily packing of the cavity for four months, resulted in complete recovery. TOEPLITZ.

150. ZIEM, when removing adenoid vegetations by means of cold snare introduced through the nose, controls the operation by introducing the index finger of the other hand into the nasopharynx. KILLIAN.

151. GUILLAUME calls attention to the influence of heredity in the etiology of adenoids. He thinks that the best method of operating is to crush the growth with the fingers (not simply strip it off with the nail). This should be done with rigid antiseptic precautions. It is inapplicable only when the vegetations are hard or very large. RIPAULT.

152. HESSLER operated upon 100 cases of adenoids with Schütz's pharyngo-tonsillotome and was highly pleased with the result. The instrument can be used readily and without danger even with small children, and, as no injury is inflicted except to the adenoids, hemorrhage is slight. RUMLER.

153. LERMOYEZ reports the case of a child with tuberculous family history in whom removal of adenoids was followed by recurrence and by deterioration of the general condition. In this case there was a latent tuberculosis which was aggravated by the operation. The latter may cause the dissemination of tuberculous germs in the circulation and necessitate the employment of an energetic general treatment. These cases are rare, but their occasional occurrence should make one careful to make a microscopical examination in all cases of recurrence or cases in which there is something suspicious in the previous history. The treatment should be the same as in ordinary cases, but should be especially thorough and be combined with tonic measures.

RIPAULT.

154. RIEGNER's case was that of woman, eighteen years of age, upon whom Gussenbauer's operation was performed for a

cavernous fibroma of the naso-pharynx of one and a half years' standing. It was attached by a broad pedicle to the base of the skull, filled the whole naso-pharynx, had become adherent on the right side to the pharyngeal wall, and sent a process into the right nasal cavity, completely filling it and presenting at its anterior orifice. The after-course was favorable. NOLTENIUS.

155. KAHN, from the consideration of four cases of otalgia occurring in connection with syphilis of the naso-pharynx, in two of which otalgia was the only symptom and the naso-pharynx the only part affected with syphilis, points out how important it is to examine this region in cases of otalgia, and how the latter symptom may lead to the discovery of a serious affection there. In all four cases the otalgia was unilateral ; in two the drum-membrane was normal, in the other cases it was retracted, opaque, and thickened without exhibiting any signs of inflammation. The retraction and thickening were probably not due to the specific disease, as the bone-conduction, which in syphilitic cases disappears early, was here, on the contrary, prolonged. The otalgia therefore was probably in all four cases of reflex origin. MÜLLER.

156. In KRECKE'S case, a patient who had been infected with syphilis thirty years before, and who for a year previous to the examination had suffered from ulcers in the pharynx which had never completely yielded to the influence of potassium iodide, was attacked with great dysphagia and dyspnœa. These symptoms were found to be due to the development of two very hard, smooth, round tumors in the pharynx, the lower of the two being situated above the entrance into the larynx. They shrank, although very slowly, under the influence of potassium iodide. Krecke considers them to have been syphilitic. MÜLLER.

157. BEAN'S patient, a woman, aged twenty-six, had been subject for seven years to attacks of follicular tonsillitis. The last attack left white spots on both tonsils, which extended to the base of the tongue and were particularly marked between the pillars. The curette with subsequent galvano-cautery and general treatment led to recovery. The bibliography is incomplete.

TOEPLITZ.

158. DUNN'S patient, a female, aged twenty four, presented an extreme development of mycosis leptotrichia over the entire lymphatic ring down to the glosso-epiglottic junction, including the pharyngeal tonsil, in which, at first, it appeared but temporarily, later on, however, remained stationary, presenting the same nodular white appearance as in the lingual and faucial

tonsils. Among the many remedies tried in this case, removal by forceps, cold snare, and, above all, applications of saturated solutions of permanganate of potassium cured the affection. According to Dunn's microscopic examinations the cause for the lodgment of the fungi is found in changes of the epithelial layer of the mucous membrane. TOEPLITZ.

159. INGALS reports twelve cases of pharyngomycosis seen during three years, in eight of which a thorough cure was established by the galvano-cautery alone. In seven of these cases the patients had suffered from many previous attacks of "sore throat," which, in eight, had been present from four to eight weeks, but in only one was there distinct evidence of previous follicular tonsillitis. In one case there had existed specific pharyngitis, in three cases dyspepsia, in one case general debility, and half of the cases were in general good health.

TOEPLITZ.

160. CROSSFIELD reports two cases of pharyngeal tuberculosis, the first of which was without, the second (farther advanced) with laryngeal and pulmonary lesions, and was also associated with nodules and ulcers within the nasal cavity. Both were treated with curetting and lactic acid, by which the former was cured, the latter greatly relieved. TOEPLITZ.

161. In BUTLER's case, a male patient aged twenty-six, there was a marked bulging just above the right tonsil, with subacute inflammation. The supposed abscess was incised, and a calculus was found which was so large that it could not be withdrawn with forceps but had to be shelled out with the finger. The stone is the largest tonsillolith on record ; it measured 25 *mm* × 22 *mm* × 18 *mm*, and weighed 85 grains. TOEPLITZ.

162. The tonsillolith removed by CAMPANI and ARENA weighed 2.79 *gm.* (43 grains).

163. SCHADLE, in his case of adherent soft palate, severed the attachments with knife and scissors and kept the cavity open by a strip of iodoform gauze split for half its length. The strips were drawn through the nostrils and united with the oral end. The raw surfaces were occasionally brushed with mono-chloracetic acid. TOEPLITZ.

164. In LAMPHEAR's case, a male patient, aged twenty-four, the affection reported as cyst of the pharyngeal tonsil closely resembles the cases of cyst of the bursa pharyngea, which have been well described by Tornwaldt. TOEPLITZ.

165. In VANSANT's case, occurring in a miner, aged forty-five,

the tongue was found attached to the surface of the gums and the roof of the mouth by a thick cicatrix which extended across the dorsum opposite the back molar tooth, leaving but a small circular opening near the centre, three eighths of an inch in diameter, which led into a narrow canal downward to the right of the epiglottis. After two preliminary unsuccessful attempts at detaching the adhesions with the knife under cocaine, the scars after preliminary tracheotomy were dissected from the gums, palate, and tongue by means of a semicircular incision under the chin extended to the hard palate. Dissection at the side of the tongue exposed four abscesses, containing one ounce of greenish pus. But the scars re-formed also after this and two subsequent operations, and the patient died from exhaustion.

TOEPLITZ.

166. ROE'S patient, a woman, aged forty-nine, experienced for nine months constriction of the throat, dysphagia, and otalgia, and became emaciated. This was due to a tumor, which projected from the posterior pharyngeal wall, extending vertically from a point opposite the uvula to a point opposite the arytenoid cartilages, and laterally from one posterior pillar to the other. It was ovoid, larger above, and covered with mucous membrane. It was removed under cocaine by an incision, one and a half inches long, in the median line. Enucleation was effected with the aid of a thin, curved elevator, and after careful dissection of the very firm attachment of the tumor, which for its entire length connected it with the underlying prevertebral fibrous tissue. It was found to be a combination of lipoma molle and fibro-lipoma. The cavity that remained healed after three weeks, leaving but a slight scar along the median line. TOEPLITZ.

167. JOHNSON'S patient, a young man aged sixteen, suffered from frequent attacks of acute tonsillitis. Six weeks before the first examination he complained of soreness of throat, dysphagia, thickness of voice, slight dyspnœa, and mouth-breathing. The impregnation with sarcomatous deposits was found to extend over the entire soft palate, faucial pillars, tonsils, and hard palate to within half an inch of the incisor teeth ; also backward and downward over a portion of pharyngeal wall, the base of the tongue, the epiglottis, and the upper part of the larynx, but not reaching the true vocal cords. There were cauliflower-like granulations varying in size from a rice kernel to a good-sized pea with partial superficial ulceration, purulent discharge, and

partial development of vessels. The uvula was destroyed, the cervical glands being of about the size of a filbert. The patient was very weak, but not cachectic, and weighed eighty-six pounds. Microscopical examination of the growth revealed a spindle-celled sarcoma. The tumor was treated with hypodermic injections of the toxines of erysipelas and the Bacillus prodigiosus, which were obtained from filtered cultures. Daily injections with erysipelas toxines were commenced with fifteen minims, increasing the dose every day until it had reached sixty minims. The injections made into the arm or leg always caused redness, swelling, and pain, which persisted up to thirty-six hours. The temperature varied from 99° F. to 103° F., with occasional, sometimes severe, chills. The treatment was continued for eight months with but occasional interruptions. A slow, but constant improvement was noticeable, the soreness disappearing first and then the dysphagia; the weight increased to 107 pounds, and the granular masses disappeared. The patient at the last report, a year after the first onset of the disease felt no annoyance. On Oct. 1, 1894, there remained but one or two spots of ulceration and a slight central prominence; otherwise cicatrization and contraction have replaced the tumor and white bands of adhesion between the hard palate and fauces have formed. The stage of acme of development and the final stage of cicatrization are illustrated by two drawings.

TOEPLITZ.

168. STOVER's patient, male aged thirty-six, exhibited the symptoms of submaxillary abscess of the left side with dysphagia and œdema. The internal administration of calomel and frequent spraying of the throat with tinctura ferri chloridi (1:15) obviated tracheotomy. TOEPLITZ.

169. CASSELBERRY's patient, a girl aged four months, when convalescent from the pseudo-membranous form of follicular tonsillitis, was seized with suffocation, cyanosis, and stertorous respiration, the voice being unimpaired. On palpation a tumor was found in the median line which pressed upon the larynx and which upon incision failed to yield pus. Tracheotomy led to recovery, effected by spontaneous resolution of the lymphadenitis without suppuration. TOEPLITZ.

Book Notices.

I. **A Review of the Present Status of Otology Based on the Results of my Observations Extending over a Period of Twenty-four Years.** By Dr. F. BEZOLD, Professor of Otology in the University of Munich. Published by J. F. Bergmann, Wiesbaden ; ix., and 196 pp. Price 7 mark. Reviewed by Dr. E. BLOCH, of Freiburg. The review translated by Dr. J. A. SPALDING, Portland, Me.

This book, together with the last triennial statistical and clinical report included within its pages, offers us a comprehensive review of Bezold's experience of many years, and contains his latest opinions concerning the most important questions of modern otology. The report for the last three years, from 1890 to 1892, follows in its arrangement those which he has previously published. And in this, the latest one of all, he insists still on the fact, that he relies less and less for a diagnosis upon the apparent condition of the drum-membrane itself, and makes his last appeal in certain frequent forms of ear disease more and more to the functional tests of hearing.

In the grand review of all the reports, the author, in correspondence with the advances in otology, urges the increased value of the later reports in the determination of important questions, and thinks that the last is the most important of all, as it opens points of the greatest weight from a purely scientific point of view.

According to Prof. Bezold, there are three epochs in modern otology : that of the mastoid operation inaugurated by Schwartze ; the introduction of an expanded Lister asepsis ; and the introduction of functional tests of the organ of hearing to which Lucae gave the first impulse.

And at this point let us say, as Bezold has too modestly forgotten to do for himself, that to him, too, we owe many important results obtained by his persistence in following out Lucae's suggestions.

I. THE DISEASES OF THE EXTERNAL EAR amounted to about one quarter of all the cases observed, were seen in nine tenths of the cases in adults, and in about two thirds of the patients in one ear only. In *atresia* of the external ear the *annulus tympanicus*, as Joel asserts, is invariably absent, so that any operative experiment is excluded, but even in double atresia the inner ear still maintains some function, so that those so afflicted do not become deaf-mutes.

Another interesting suggestion is the rare *idiosyncrasy to boric acid* powder, revealing itself in the form of a characteristic boric eczema of the meatus.

Furunculosis, in agreement with other authorities, he refers to the external portion of the canal, where the hair glands are most abundant. The author's treatment at present, based on long experience and satisfactory results, is the use of dry pressure plugs of iodoform-cotton pushed in as far as the cartilaginous meatus. This soothes the pain, and relapses are less frequent.

Otitis externa diffusa was seen in but one per cent of the patients, mostly in adults, and generally in one ear. It is possible that many cases of middle-ear suppuration, especially minute perforations of Shrapnell's membrane, the importance of which has only been revealed to us in the last ten years, used to pass for otitis externa. Nevertheless, we can have a fœtid secretion in the external meatus due, as Bezold long since showed, to the bacteria of decomposition.

Otomycosis was never seen except in adults, and the diagnosis was always verified by the microscope.

Bezold was the first German to call attention to a special form of inflammation of the external meatus, a genuine *otitis externa crouposa*, seen mostly in adults, and in but one ear at a time. It is characterized by violent pain, swelling of the retro-maxillary glands, contraction of the meatus, and secretion of a characteristic fibrinous membrane, but not by injury to the hearing.

Exostoses were rare, even in men, mostly in adults, more often bilateral than unilateral, often associated with sclerosis of the middle ear, and very rarely with suppuration.

In discussing the important topic of the *removal of foreign bodies from the meatus* the author says : "Only those who are familiar with the use of the reflecting mirror, and even more so with the anatomy of the meatus and drumhead, have any right to attempt the instrumental delivery of a foreign body from the auditory meatus."

One third of the isolated affections of the *Mt* were *traumatic ruptures.* At this point we are warned to let well enough alone. Ruptures due to the action of indirect force, especially of compressed air, are rarely followed by suppuration. But if by the use of lotions into a *dry meatus* we bring innocuous pyogenic microbes into contact with the mucosa of the middle ear, these microbes increase upon the latter with great rapidity.

Finally, we observe that Bezold has rarely seen an uncomplicated myringitis, acute or chronic.

II. DISEASES OF THE MIDDLE EAR are seen about three times as often in adults as in children. Tubal affections, on the contrary, with or without exudates into the tympanum, and with or without atrophy of the *Mt* are more frequent in children. In contradistinction to products due to inflammation of any sort, serous exudate with a closed tube, due to hyperæmia ex vacuo, does not contain organisms, as has been proved by Scheibe. The chief therapeutic indication in all diseases of the tube is proper treatment of hyperplasia of the tonsils and adnexa. In the last six years Bezold has removed adenoid vegetations in about a quarter of all of his patients, though the proportion in which they were present was much larger. All closure of the tube is treated with politzerization or with the catheter. Bougies are generally not called for. All tubal diseases are situated almost exclusively at the pharyngeal or tympanal extremities, as Schwartze long since showed. Paracentesis of the *Mt* was performed a few times in such cases, and was never followed by suppuration.

Bezold is of the opinion that *acute or subacute catarrhal otitis media* does not vary essentially from purulent suppurative inflammation. The nature of the secretion, as well as of the micro-organisms, is identical in both, but in the purulent forms the mucosa of the middle ear can no longer resorb the masses of secretion, so that the *Mt* is ruptured and a suppuration of longer or shorter duration is excited. It is only when the *Mt* is perforated that the secretion is decomposed by the entrance of bacilli from the external meatus inward. The ciliated epithelium of the tubal mucosa prevents similar bacteria from entering via the nasopharyngeal space. Such knowledge is very important, so far as our treatment is concerned, for bougieing the tube and injecting fluids from the naso-pharyngeal space are contra-indicated, whilst we see only benefit from the use of the catheter aud politzerization.

The *chronic form* of non-suppurative otitis media is rare in children, and generally bilateral. The percentage of such cases varies, in the opinions of otologists, from fifteen to fifty.

It is in this section of otology that we find ourselves in a province in which Bezold has made his name well known. He urges that, too often, both the mirror and the catheter give us no clue to a prognosis, which can only be obtained by careful tests of the hearing. Symptoms of depression on the *Mt* have some value, but when absent, greater weight must be placed on tests with the whispered voice, determination of the lower register for tones by aërial conduction, and the tests which go by the names of their discoverers, Schwabach, Rinne, Galton, Weber, and the final tests for defects in the various tone-registers. Differing from most aurists, our author places but little reliance on Weber's test in this class of patients. Wherever we have pathological alterations in the middle ear, particularly in the sequelæ of suppurations, we get the same results from tests of the hearing power as in the so-called dry catarrh, namely, dislocation upward of the lower limits of tone perception through the air, abnormal prolongation of the diapason vertex, and Rinne abbreviated so as to be no longer + but even —. Any prolongation of bone-conduction beyond the normal limit must abbreviate the positive excess normally shown by the Rinne test.

Bezold cannot understand why, then, in chronic non-suppurative diseases the same complex of symptoms should not indicate the same situation of the disease; in other words, why this complex should not be pathognomonic of diseases of the sound-conducting apparatus. To tell the truth, this diagnostic characteristic is the more certain, since in affections of the nervous portions of the ear we have an entirely different set of functional disturbances.

Simple otitis *with* depressions in the *Mt* was seen in three per cent. of the patients, and *without* them in seven, invariably in adults, and generally bilateral. A third group, dysakusis, which lacks the characteristics of either of the two previous groups, must also be made.

The most interesting group, from a scientific point of view, is the second, *without depressions in the Mt* with its plain diagnostic points, its absence in children, its predominance in adults from the age of twenty to fifty, and its great preponderance in women ; in the latter point of view the puerperal period playing a great role. Patients of this class beyond the age of fifty belong rather to the dysakusis group, in which the labyrinth is affected. In the second class heredity plays a role far more important than in all other aural affections, and here too we hear most often of tinnitus and vertigo. The pathology of this class is based on five cases only of post-mortem examinations, in which the author saw ankylosis of the stapes, the rest of the middle-ear being intact. This fact agrees with Politzer's observations, though Bezold's clinical observations are by no means so precise.

From all this we see, according to our author, that it would be better to separate the second group from the catarrhal diseases of the ear, and entitle it "Sclerotic Processes in the Sound-Conducting Apparatus, with a Negative Condition in the *Mt.*" In so doing, we must recall the fact that, so far as we at present know, the pathological process is limited to the plate of the stapes, a district which belongs to the sound-conducting apparatus.

The reviewer would here suggest that, if the author were to try the pressure experiment as a means for diagnosis, he would substitute "Stapes Ankylosis" for the long title mentioned above. Complex cases, capable of easy differentiation by functional tests, are entered on our books as ankylosis with labyrinthine disease, for the labyrinth is often affected as post-mortem examinations show, and as can be diagnosticated during life by contraction of the upper tone-limits.

These observations show, physiologically, that perception of the lower portions of the scale depends upon an intact conducting apparatus.

Bearing these differential points in view, Bezold treats cases of the second group with the pressure probe, rarefaction, and the catheter, excluding all operations which, in his opinion, do not improve the rather poor prognosis. The latter is more favorable with depressions in the *Mt* for then the air douche may exert a favorable influence.

The difference between acutc and chronic suppuration of the middle ear does not lie in the duration of the disease, nor in the size of the perforation, but in the tendency of the perforation to remain patent or to cicatrize. Hence the author regards a phthisical suppuration as chronic from the start. So even in a chronic suppuration, a perforation, even though large, may ultimately close.

Acute inflammation of the middle ear, inclusive of empyæma of the mastoid, is frequent in children, and mostly unilateral. Genuine *acute middle-ear suppuration* Bezold has never seen in adults, in contradistinction to the frequently recurring suppuration in children with tubal difficulties. In those otherwise healthy, the perforation is and remains small. If the suppuration persists, we often see the tympanic mucosa proliferating over the margins of the perforation, a symptom absent in severe constitutional affections. The perforation in acute suppuration is not, as so often taught, in the anterior but in the posterior inferior quadrant. Bezold has never seen rupture of Shrapnell's membrane in acute suppuration of the middle ear.

At this point the author reiterates his dread of Weber's nasal douche, which he applies as seldom as possible, owing to its bad effects in many cases despite the greatest care.

Even after the mastoid becomes affected, the suppuration in the tympanum may cease, the perforation cicatrize, and yet for all that, the morbid process may continue its inroads into the mastoid. The possibility of primary suppuration in the mastoid is rather doubted by the author. Secondary participation is more frequent than has generally been assumed, and if many cases are relieved without an operation on the bone, and without serious complications, this good fortune is only owing to the local relations of the pneumatic cells. The existence of a large number of small cells with a large expanse of mucous membrane, favors the resorption of the secretion, whilst the presence of a few large cells disposes the parts to a prolongation of the suppuration. The pus generally makes its way to the surface of the bone at a spot called by the author the mastoid fossa above the posterior end of the antrum, more rarely at the lower surface of the mastoid.

Under the title of *otitis media purulenta chronica*, Bezold includes all those cases in which the suppuration was present at the time of examination. Those that have ceased are registered separately. This affection occurs in about twenty per cent. of all ear patients, mostly in adults, and more often in one ear alone than in both. Fœtor is found in the neglected chronic cases. Granulations and sclerotic processes are a sort of protection, though at times they may result most unfavorably. The latter are invariably seen in chronic suppuration of the ears, except in enfeebled and tuberculous patients.

Perforations in Shrapnell's membrane, though first discussed by Moos in 1866, have been more carefully studied only in the last ten years. They are often combined with tubal processes, or with the results of the same, whilst again they may depend on cholesteatoma of the attic and adjacent portions of the ear.

Cholesteatoma was seen in one per cent. of all the patients, and mostly in one ear alone, though this does not represent all of the cases in which stratified epidermis was seen in the middle ear. It is not always the upper margin of the *Mt* and the neighboring bones which are thus destroyed, for occasionally the posterior and rarely the superior portions of the margo tympanicus permit the morbid alterations to make an entrance. The perforation, however, invariably lies at the edge of the *Mt*, so that the epidermis of the meatus can proliferate by propinquity toward the spaces of the middle ear. However much this transformation of epidermis may in its turn be a sort of protective arrangement, in so far as epidermis is a better protection against outside morbid influences than mucosa, it is fatal in cavities in which the exfoliated masses cannot be evacuated, but roll themselves concentrically into cholesteatomatous globules—in other words, in spaces with narrow outlets. Therein lies the increase of these growths, and the further disturbance which they excite when they are moistened and swell, and so exercise increased pressure upon the surrounding bony wall when they become decomposed and give rise to uninterrupted suppuration.

Perforations of Shrapnell's membrane, and cholesteatoma, amongst all the diseases of the ear, cost the most human lives.

Suppurations in phthisical patients have been kept separately since 1881, and Bezold finds that they compose about five per cent. of all the suppurative cases as a whole. They are most frequent in adults, and generally unilateral. Ranked by symptoms, they stand between the acute and the chronic suppurations. The suppuration and the perforation are indeed acute, but other symptoms, as heat, swelling, and pain, are absent. Then we have rapid loss of the *Mt*, by one or more perforations, together with destruction of the ossicular articulations, of the intrinsic muscles, and of the bone.

We must also notice in this category the total absence of any sort of healthy reaction against the devastations on the part of the tissues affected—such as the mucous swelling, the formation of granulations, sclerosis of the bones, and the formation of epidermis in the mucosa. All of these favorable signs, we repeat, are absent; and at the most we find a fibrous exudate. Tuberculous exudates cannot be accused as the cause of this helpless condition of the organism, because even when these are actually present, we can see, in the most scrofulous children, caries and necrosis with florid granulations, with subsequent sclerosis of the bones, and epidermization of the mucosa. Here, then, we have rather the reduced condition of marasmic nutritive disturbances, as seen in various infectious diseases, such as diabetes and marasmus of the aged, which offer similar appearances. Occasionally we are brought face to face with congenitally diminished capacity for resistance to disease.

Caries and necrosis which occur in all forms of chronic suppuration are not specially tabulated in Bezold's reports.

The *treatment* of *aural suppuration* is of paramount importance when we consider the proximity of the ear to the brain. In this point of view, Bezold still clings to the dry boric-acid treatment. The only counter-indication is the appearance of a boric-acid eczema as before mentioned. Of course the indications for operations are always followed, and good results obtained. Boric acid is also advised in chronic suppuration with perforation of Shrapnell's membrane and cholesteatoma, a method which many of us have followed to advantage. In operating for cholesteatoma, the author argues for permanent orifices behind the auricle when the cavity in which the disease lies is large or has to be enlarged for removal of the masses. Whilst these cases may recover in a few weeks, those operated upon for caries from tuberculosis, scrofula, rhachitis, or hereditary syphilis, may demand even years for recovery.

Pure *otalgia* was found in more than half of the cases to be due to caries of the teeth.

A special section is given to *scarlatinal otitis suppurativa*, based on over one thousand patients in whom were seen chronic suppuration with persistent perforations or old cicatrices. Our author regrets that treatment rarely begins in these patients till the discharge has long been chronic, because it shows so much neglect by both parents and general practitioner. And this neglect is proved by these facts: that in half of the scarlatinal cases a greater portion of the *Mt* is gone, whilst in acute suppuration only ten per cent. are so badly affected ; that this membrane is totally destroyed in over thirty per cent. in the chronic and only eight per cent. in the acute ; that the ossicles are lost in twenty per cent. of the chronic and only five per cent. in the acute ; and that deafness occurs in twenty per cent. after chronic scarlatinal suppurations, and only in four per cent. in similar acute suppurative affections of the ears.

What a broad province for prevention of deafness lies here opened before the family physician! He is the one on hand at the outbreak, and it is his chance to treat it in the acute stage. So then from this point of view Bezold urges that more time be given to instruction in diseases of the ear in medical schools. A more forcible argument for the need of such instruction cannot be found than the dry statistics given above.

III.—DISEASES OF THE INNER EAR were observed in about ten per cent. of Bezold's patients, mostly in adults, and more often in both ears than in one only. The diagnosis is invariably based on functional tests of hearing.

Purely nervous disease is known by total and permanent deafness. Here, too, we include deafness with defective speech, or subjective noises without loss of hearing. Five per cent. of these patients *acquired their deafness*. When no visible cause exists, we diagnosticate by exclusion. That is to say, the symptoms indicative of middle-ear disease—prolongation of Schwabach's test, negative Rinne's test, and loss of the lowest tones by aërial conduction—are not only not seen in nervous deafness, but just the opposite. Hence, in diseases of the inner ear, we meet with shortened diapason on the vertex, positive Rinne's test, and preservation of low tones by aërial tympanal conduction. On the contrary, pronounced losses of tones in the scale, particularly in the upper portion, are rare, and mostly seen in deaf-mutes only.

Running like a red thread through the work, we see this persistent advocacy of functional tests, and in this section the theory rises into the dignity of a polemic, which those who are interested can study in the original.

Severe disturbances were seen after *meningitis* in over one hundred patients, and after *mumps* in eleven, most of whom, however, did not come for examination until entering into adult life.

Any exact appreciation of the value of *diaphoretics*—such as pilocarpine and iodide of potassium—in nervous ear diseases is interfered with by occasional spontaneous recoveries—a noteworthy distinction, by the way, in comparison with sclerotic processes, which rarely retrograde.

Three sarcomata and four carcinomata were observed.

To conclude: the work before us offers much material for thoughtful considerations and many suggestions of practical value in modern otology, and in form and design is worthy of its well known publisher.

II. **Anatomie normale et pathologique des fosses nasales et de leurs annexes pneumatiques.** Par E. ZUCKERKANDL. Traduit sur la 2e édition allemande par L. LICHTWITZ et P. GARNAULT. 2 vols. (text and plates). Paris, 1895.

French readers are to be congratulated upon the appearance of this translation of the second edition of Zuckerkandl's book, which, as the translators justly say, forms the basis of modern rhinology. From random comparisons made with the original, we should say the translation was a satisfactory and adequate representation of the original. The publishers also have done their part well, the get-up of the book being excellent and the print generally clear. The illustrations also are satisfactorily reproduced, and are arranged conveniently for reference, the translators having grouped them all together in a separate volume. The advantages of this plan in a book of this size, used for study and frequent reference, are obvious. A. D.

III. **The Year-Book of Treatment for 1895.** By various authors. Lea Brothers & Co., 1895.

This useful little book, which aims at the difficult task of separating the chaff from the wheat in the field of medical literature, contains some thirteen pages of abstracts of articles upon ear diseases. These comprise mainly reports of the papers presented at the International Medical Congress of 1894 and the meeting of the British Medical Association, with notes upon new remedies, new instruments, and new diagnostic methods. The abstracts are models in their way, being clear and yet sufficiently brief, and giving adequately the gist of the originals from which they are taken. A. D.

IV.—EDWARD BRADFORD DENCH, Ph.B., M.D.: **Diseases of the Ear.** A Text-Book for Practitioners and Students. 615 large-octavo pages on heavy paper. With 8 colored plates and 152 illustrations in the text. New York: D. Appleton & Co., 1894. $5.

This is an interesting and instructive text-book. It does not compare with the fundamental works of Politzer, Schwartze, Gruber, and Urbantschitsch, whose authors by many years of diligent labor have essentially aided in raising modern otology to its present height, but it may be placed on the list of the better English and American treatises.

The anatomy occupies forty-seven pages, and gives a sufficiently clear description of the form and intricate relations of the different parts of the hearing organ, illustrated by numerous good drawings, many from the author's own collection, some very beautiful ones from life and, in the latter parts of the book, in colors by Dr. W. A. Holden.

Though a text-book for practitioners need not aim at the completeness and precision of description found in our standard works on general anatomy, such as Schwalbe and Quain, the author might have pointed out, even more than he has done, the practical importance of the topography of the ear in the way by which, more than thirty years ago, v. Tröltsch placed his text-book at once at the head of all others.

The chapter on the physiology of the ear is very short, twenty-four pages, but in a practical treatise could hardly have been more extended.

The chapters on physical and functional examinations, especially the latter, are very good. It is a help, even to experienced aurists, to find a clear and concise presentation of the many finer hearing tests which have been invented of late, and the very definitions of which are difficult to keep in mind. We mean, besides the well-known tests of Rinne and Weber, those of Gardiner Brown, Schwabach, Bing, Gellé, Eitelberg (not Itelberg), and Gradenigo ; further, the experiments with series of tuning-forks by Lucae, Bezold, Hartmann, Blake, Moos, and others ; then König's rods and Galton's whistle. The comparative loudness of the different consonants in hearing tests is taken from a table of Blake. It would have been an act of justice, and no less graceful to the American author, if the name of the original investigator of this subject, O. Wolf of Frankfort-on-the-Main, had been mentioned.

To this department the author has evidently devoted a good deal of thought and labor.

The practical part of the book gives testimony of considerable personal experience in the whole field of otology.

The descriptions are very clear and enter fully into the minutest details, particularly when operative procedures are concerned. Here the author gives the impression as if he imagined students before him, whose gaze he wants to fix on some important point, and whose hands to guide in a certain direction. This is an excellent feature of the book which comes out best in the intratympanic operations. The performance of a simple paracentesis of the membrana tympani in acute otitis media purulenta may serve as an example. "The incision should lie above and behind the short process of the malleus, be carried upward and inward parallel to the neck of the malleus, until it has pierced the cellular tissue within the tympanic vault and impinges upon the bony wall. The knife is then swept backward to the periphery of the membrane, the deep tissues being divided throughout the whole incision. . . . It is well to extend the section along the postero-superior wall of the ear canal for a quarter of an inch, dividing all the soft parts down to the bone." He calls this incision of the canal down to the bone an internal Wilde's incision, but warns us not to lose time over these superficial operations when there is deeper mastoid involvement.

Of chronic catarrhal otitis media the author distinguishes a hypertrophic and a hyperplastic form. "The changes in the hypertrophic form may consist in an accumulation of fluid, localized or diffused hypertrophic changes, and adhesions." Large incisions readily dispose of fluid within the tympanum, but the collection is exceedingly liable to reaccumulate, especially in individuals beyond fifty years of age. This and the hyperplastic form (sclerosis) are so well known in their symptoms and bad prognosis (progressive deafness) that we shall follow the author only in a few essential points. The prognosis is bad when labyrinthine changes complicate the intratympanic lesion. This may be assumed if the upper tone limit is lowered, as the first turn of the cochlea, the one that perceives the highest notes, lies nearest to the middle ear and suffers first in extensions of middle-ear trouble to the labyrinth. Further help in making this diagnosis is furnished by the tuning-fork. "In a given case where whispered words are but poorly perceived, if the natural relation between air- and bone-conduction is reversed, Rinne becoming negative at the fork c^2 (512 v.) or c^3, we are warranted in assuming that most of the impairment depends on intratympanic changes. If the reversal occurs only at C (64 v.), whereas for c (128 v.) the natural condition

(Rinne +) exists, we may assume that the labyrinth is seriously involved." The author mentions and recommends most of the methods of operative and non-operative treatment used in this obstinate disease. In labyrinth involvement he is very partial to pilocarpine, which he no longer administers by hypodermic injection but by the mouth, beginning with gr. ⅛ three times daily, increasing the dose gradually until a moderate physiological effect follows each exhibition. In cases where the patient must be away from home the entire day, one dose may be given immediately on rising, another on going to bed. One to one and a half hours after taking the medicine the patient must carefully protect himself from exposure. "No result can be hoped for unless the plan is persisted in for at least two months; if then the slightest improvement is manifested, it should be continued for twice or thrice this period. In syphilitic patients, pilocarpine may be combined with iodide of potassium."

As to the operative treatment in hypertrophic and hyperplastic aural catarrh, the author prefers the removal of the membrana tympani and of the hammer and incus to all other procedures. He thinks that division of the posterior folds, of adhesions of the tendon of the tensor tympani, and of the stapedius may do a certain amount of good, but they all are only partial measures. These operations are not new, and particularly are not new in New York. Twenty-five to thirty years ago they were practised very extensively by the elder Dr. Simrock; during the last ten to fifteen years Dr. S. Sexton practised them with especial enthusiasm and praised the results as highly gratifying. Now our author is their champion. Yet they have not received the full endorsement of the profession. Not much harm has followed them, but the results have been too often disappointing. Without disregarding the objections that can legitimately be raised against them, they rest on one long-known, undeniable fact, viz.: That in sclerosis the impairment of hearing is in many cases considerably improved by a perforation of the drum membrane. Like all the other operators, our author first makes an exploratory myringectomy. A large flap, involving the entire postero-superior segment of the membrana vibrans, is turned downward and forward. Under cocaine anæsthesia the intratympanic structures are inspected and the mobility of the stapes is determined with a fine probe. If this exploration proves favorable and the hearing is improved, the author seeks to establish a permanent opening by removing the whole drumhead and the malleus and incus, sparing the stapes, but mobilizing it. If a new membrane forms, he removes it; if a third one forms, he removes it likewise. The new membranes are mostly thin, and more or less improvement of hearing is permanent. Labyrinth involvement is a counter-indication to any operation. The author devotes 49 pages to the description of middle-ear operations, and 32 to those involving the ossicular chain. We cannot follow him into all their details, but anybody who wants to practise these operations will receive the fullest information from reading this chapter. The author has operated in this way for sclerosis in 34 cases, in 21 under cocaine, in 13 under ether anæsthesia. In 11 cases he removed the *Mt* and larger ossicles for suppurative processes; in 10 cases he performed stapedectomy. He considers the results satisfactory on the whole, and "though we can state in no case the amount of improvement to be expected, and it is always our duty to inform the patient of the experimental character of the measure, we certainly fail to fulfil our entire duty to the patients if the subject is not presented to them fairly."

Particularly instructive are chapters XXII., on chronic otitis media purulenta, where the author dwells on the importance of curing otorrhœa; chapter XXIII., on the residua of chronic otitis media; XXV., the inflammation of the mastoid process and its treatment; and XXVI., the intracranial complications. In the operative treatment of these diseases the author follows the safe rules of Schwartze. The indications are well drawn and the descriptions of the different procedures are precise, and illustrated by numerous drawings, some even in colors.

Section IV., upon diseases of the perceptive mechanism, contains a great deal of good matter, though there are many omissions. The pathological histology and bacteriology of the labyrinth, to which Moos, Steinbruegge, and others have furnished such valuable contributions, have not caught the eye of the practical author, or if they have they did not set his pen in motion. In the treatment pilocarpine and strychnine are his mainstays, with the addition of the iodides in specific affections. For noises he recommends large doses of hydrobromic acid or its salts.

The diseases of the nose and naso-pharynx, so important in the etiology and treatment of ear disease, are described briefly but very well.

Dench's book can be heartily recommended; the specialist will value its exhaustive presentation of modern operative ear surgery, whereas for the student a handier, less bulky, less heavy, and correspondingly cheaper treatise, prepared more on an historical basis, with fewer repetitions, and conciser language, might have been preferable. H. K.

V. **Diseases of the Ear.** By MARMADUKE SHIELD, M.B., F.R.C.S. Published by Messrs. Cassell & Co., London.

Mr. Shield is to be congratulated on having produced an extremely clear and practical book; such a work, being founded solely on the author's own experiences, deserves the most careful study by students and practitioners.

He has shown sound judgment in reporting many cases *in extenso*, not because they are rare or anomalous, but because they illustrate and impress important facts.

Debated points and minutiæ are carefully avoided; but a more exact description of the mastoid antrum and its important anatomical relations might have been given with advantage, considering the important part it plays in nearly all the most serious complications of middle-ear suppuration; and further, it must be felt by all who have examined the formation of this cavity from fetal life onwards, that it should be described as forming a definite and regular part of the middle ear.

The statement made on page 14, that "the distance of the antrum from the lateral sinus is from three to six inches," is, of course, a printer's error.

In describing the method of Eustachian catheterization, the operator is directed to stand "on the left of the sitting patient," a proceeding which to most surgeons would seem awkward unless they happen to be left-handed.

In the description of adenoid growths, the following sentences require revision: "Much lymphoid tissue exists in the so-called fossa of Rosenmüller immediately behind the extremity of the lower spongy bones and in the vault of the pharynx." "A mass of lymphoid tissue occupying Rosenmüller's fossa has received the name of the pharyngeal tonsil."

The chapters on aural polypus and the diagnosis and treatment of the cerebral complications of perforative otorrhœa are, as was to be expected from Mr. Shield, extremely valuable.

Turbinated *bones* are constantly referred to, a term which ignores the all-important vascular tissue covering the bones.

The colored illustrations are excellent, and the formulæ given at the end, though few, are of the best.

VI. **The Anatomy of the Nasal Cavity and its Accessory Sinuses.** By Dr. A. Ónodi. Translated by St. Clair-Thomson, M.D., M.R.C.P., F.R.C.S. Published by H. K. Lewis, London.

In the second edition, which has been translated by Dr. St. Clair Thomson, sixteen plates, instead of twelve in the first edition, have been chosen from among fifty or more of sections made by Dr. Ónodi. The translator has considerably enlarged the explanation which faces each plate. The choice of sections made is a wise one, the series giving all that is necessary for obtaining a clear idea of the topography of this complicated region.

The introduction gives the best description we have yet seen of the anatomy of the nose; reference being given at each step to the appropriate plates, which are woodcut reproductions of photographs taken of the sections; this method of depicting the sections has been entirely successful, and takes the place, as much as is possible, of actual dissections.

The difficulty of dissecting the nose under the system ordinarily adopted in dissecting-rooms is so great that some such work as Dr. Ónodi's is urgently needed by those who wish to thoroughly understand nasal anatomy; and we can strongly recommend this book for such a purpose.

Specialists, as well as the ordinary practitioner, will find it extremely useful as a book of reference.

VII.—P. Garnault: **Précis des Maladies de l'Oreille.** A duodecimo volume of 550 pages, with 173 figures in the text. O. Doin, 8 Place de l'Odeon, Paris, 1895. Price 8 francs.

Garnault's *Précis* is a carefully prepared text-book, very handy, very well arranged, with judicious divisions and subdivisions; rendering conspicuous by heavy-face type the subject-matter of each paragraph, such as a student wants for committing to memory, and a practitioner for informing himself readily on questions that may come up in discussion or for reference in obscure cases in his practice. Numerous excellent drawings, mostly taken from the *Anatomie* of Testut, and the French translation of Politzer's text-book, are a great aid to understanding normal and pathological conditions and the management of cases. The section on operative interventions is clear and to the point; insufficient, however, in the most difficult department, the operations for otitic brain diseases.

The author gives a good, short, yet exhaustive description of the methods and usefulness of *massage in aural disease.* Mentioning the external massage of the neck by Gerst, Zaufal, Politzer, Urbantschitsch, and Eitelberg for inflammatory affections (p. 243, etc.), he speaks of the compression and rarefaction of the air according to Hommel and Delstanche; then he describes Urbantschitsch's, Laker's, and his own studies on the massage and vibratory dilatation of the Eustachian tube; and lastly details the *direct vibratory massage of the tympanic membrane and the ossicles.* By an electromotor the "ear vibrator of Garnault" (a piston with a spiral and an inverted conical tip passing through a Siegle speculum) is moved and acts directly on the short process of the malleus, and through it on the ossicles, in a similar way to Lucae's elastic pressure probe. Garnault's apparatus has the advantage over Lucae's probe that its application, controlled by the eye, is painless.

The author is very familiar with German literature, and quotes from it more than from any other, even that of his own country. His book can be highly recommended. H. K.

VIII.—A. BROCA and F. LUBET-BARBON: **Les Suppurations de l'Apophyse Mastoïde et leur Traitement.** A monograph of 269 octavo pages, to which the Meynot Prize (1894) has been awarded by the French Academy of Medicine. G. Steinheil, Paris, 1895. Price 6 francs.

This excellent monograph is based on 146 operations on 129 patients of the two authors, who, the one a general surgeon, the other an aurist, have worked hand in hand. They go historically and critically over the whole subject, paying particular attention to the modern advances in this fruitful and important field. Starting from a safe anatomical basis the authors support their conclusions, not infrequently in opposition to the most esteemed authorities, by their own experience. The report of the numerous cases is as interesting as the text. Their use of the incident literature is extensive and appreciative, exemplifying once more the excellent spirit of modern French science, in contradistinction to that of the period of the Second Empire. The style is as simple and clear as it is elegant. For the surgeon that takes an interest in the subject, the monograph under consideration will be attractive in the highest degree. We abstain from giving extracts, but recommend to our friends most heartily to read the book itself from one end to the other. H. K.

MISCELLANEOUS NOTES.

APPOINTMENTS.

Walker, H. S., F.R.C.S., Lecturer on Ophthalmology and Otology to the Yorkshire College, Leeds.

Butts, Stanley de, M.D., Honorary Anæsthetist to the Royal Ear Hospital.

Matheson, J. C., M.B., C.M., House Surgeon to the Royal Ear Hospital.

Yearsley, P. **Macleod**, F.R.C.S., Clinical Assistant to the Ear Department, Westminster Hospital.

Pegler, L. **Hemington**, M.D., Assistant Registrar to the Central London Throat and Ear Hospital.

Hewlett, R. T., M.D., Pathologist and Registrar to the Throat Hospital, Golden Square.

Lindsay, F. W., L.R.C.P., L.R.C.S., Ed., has been re-appointed Honorary Surgeon to the Victoria Eye and Ear Hospital, Hereford.

Ershine. J., M.A., M.B., has been appointed Lecturer in Aural Surgery in Glasgow, vice Dr. Thomas Barr, resigned.

Oliver, G. H., M.R.C.S., L.R.C.P., L.S.A., has been appointed Assistant Surgeon to the Bradford Eye and Ear Hospital, vice G. H. Dodd, resigned.

Brady, A. J., has been re-elected Aural Surgeon to the Sydney Hospital, Australia.

Wilkinson, W. C., has been re-elected Assistant Aural Surgeon to the Sydney Hospital, Australia.

SOCIETY MEETINGS.

British Medical Association will meet in London on July 31st, August 1st and 2d. The Otological Section will be under the Presidency of Sir. Wm. Dalby, M.B., F.R.C.S. On August 1st, Professor Macewen, of Glasgow, will open a discussion on Cerebral Complications in Relation to Middle-Ear Disease. Various papers will be read and specimens exhibited on the other two days.

Programme of the Laryngological Section :

July 31st—The Etiology of Mucous Polypi of Nose. Introduced by Professor Guye, Amsterdam. Dr. Luc, Paris, Dr. McBride, Edinburgh.

August 1st—The Infectious Nature of Lacunar Tonsillitis. Introduced by Professor B. Fraenkel, Berlin. Dr. J. MacIntyre, Glasgow.

August 2d—The Indications for Early Radical Operations in Malignant Disease of the Larynx. Introduced by Dr. D. Bryson Delavan, New York. Mr. H. T. Butlin, London.

The Section will meet in the North Room of the Examination Hall, Thames Embankment, at 10 o'clock.

The International Congress of Otology will be held in Florence under the Presidency of Professor Grazzi, from the 23d to the 26th of September, 1895. Secretary, Dr. T. Bobone, San Remo. Subjects of discussion :

Treatment of Intra-Cranial Abscesses Following Purulent Diseases of the Ear, Dr. Thomas Barr, Glasgow.

General Treatment in Diseases of the Ear, Dr. Gellè, Paris.

General Treatment in Internal Otitis, Professor Gradenigo, Turin.

Pathological Changes of Labyrinth, Professor Politzer, Vienna.

Physiology of the Middle Ear, Dr. Charles Secchi, Bologne.

NOTES.

At a meeting of the British Laryngological and Rhinological Society, held on January 11, 1895, it was decided, in accordance with the express wish of more than three fourths of the Fellows, to include Otology in the work and title of the Association.

The Committee of the Royal Ear Hospital, London, have decided to appeal for funds to enable them to build a new hospital, the present building being found inadequate. It is the oldest Ear Hospital in existence, having been founded in 1816.

Contents of the last issues of the German Edition of these Archives (*Zeitschrift für Ohrenheilkunde*, No. 4, of vol. xxvi., appearing April, 1895).

A.—ORIGINALS.

1. H. STEINBRÜGGE. Upon Hyperostosis of the Petrous Bone.
2. E. SCHMIEGELOW. Contributions to the Question of the Diagnosis and Treatment of Otitic Brain-Abscesses.

B.—TRANSLATIONS FROM THE ENGLISH EDITION.

C.—REPORT ON THE PROGRESS OF OTOLOGY FOR 1894.

(Translated in this number).

D.—BOOK REVIEWS.

(No. 1, of vol. xxvii., appearing May, 1895).

A.—ORIGINALS.

1. H. KNAPP. History and Autopsy of Two Fatal Cases of Otitic Brain-Disease. With two lithographs and one illustration in the text. (Contained in this number.)
2. O. KÖRNER. A New Form of Influenza-Otitis.
3. L. TREITEL. A Case of Multiple Otitic Brain-Abscess, with Statistical Report from the Berlin Pathological Laboratory.

B.—TRANSLATIONS FROM THE ENGLISH EDITION.

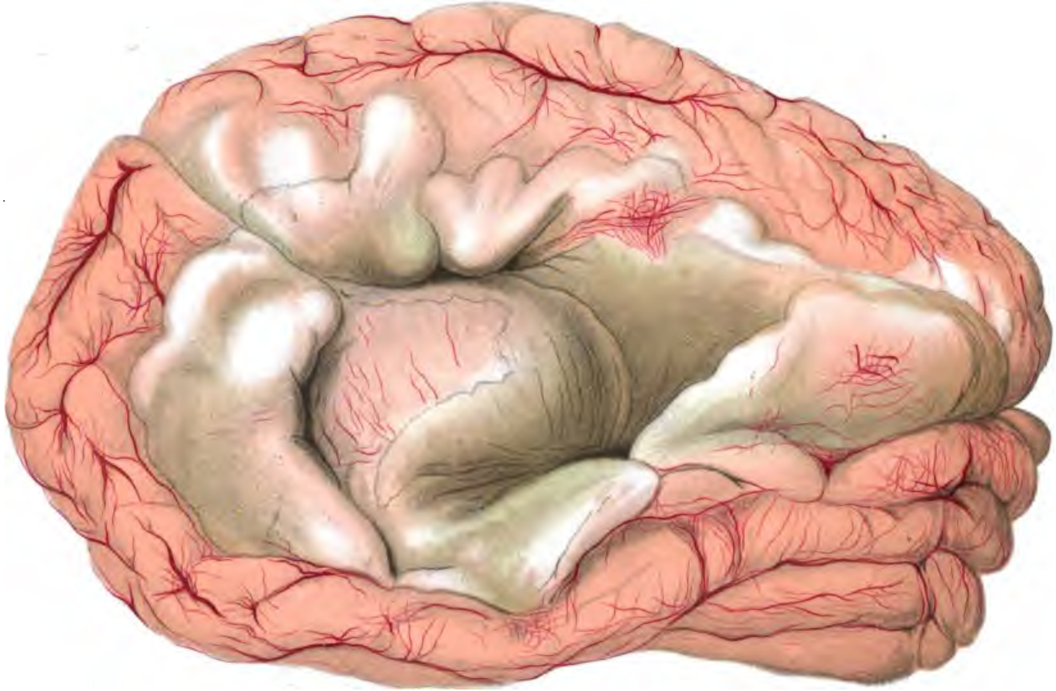
C.—REPORT ON THE PROGRESS OF OTOLOGY FOR 1894.

(Completed.) (Translated in this number.)

D.—BOOK REVIEWS.

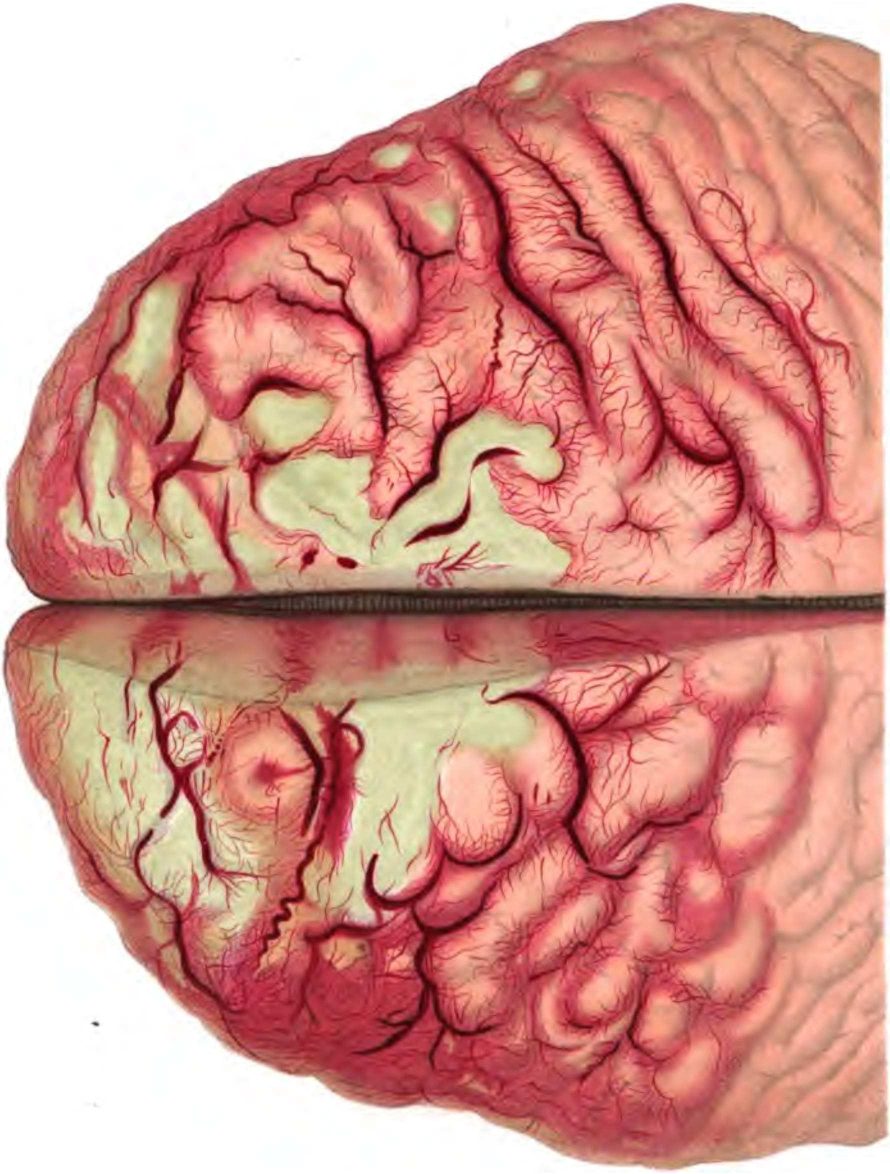
EDITORIAL NOTICE.

The next issue of the ARCHIVES, to conclude the volume, will be a double number, and appear in October.



Lith Anst v Werner & Winter, Frankfurt a/M

ABSCESS IN LEFT TEMPORO SPHENOIDAL LOBE



Lith. Anst. v. Werner & Winter, Frankfurt a/M

PURULENT LEPTO-MENINGITIS

AVoss.

Heliogravure Meisenbach Riffarth & Co Berlin

In Memoriam.

DR. SALOMON MOOS,

The co-founder and co-editor of these ARCHIVES, after a long and painful sickness, died July 15, 1895, on his sixty-fourth birthday. He was a man of unusual talent, extraordinary industry, scrupulous conscientiousness, and extensive general and medical knowledge. Competent and productive in all departments of otology, he cultivated with special zeal its most difficult one, the pathological anatomy of the labyrinth. It was through his own exertions that he rose from a country scholar to the position of a University professor, on whom, in recognition of his merits, his sovereign bestowed the honorable title of Counsellor.

From early youth accustomed to privation and hard labor, he never tired in the discharge of his duty, though for many years he had to struggle with an exhausting disease (diabetes). His example shows that to a career beset with thorns and strewed with stones, the crown of success is not denied.

His scientific achievements as well as his services to this periodical will be spoken of more in detail under the head of "Obituary" at the end of this volume.

HERMAN KNAPP.

New York, July 31, 1895.

VOL. XXIV. Nos. 3 AND 4.

ARCHIVES OF OTOLOGY.

ON THE INDICATIONS FOR MASTOID OPERATIONS IN ACUTE PURULENT OTITIS MEDIA, WITH FOUR ILLUSTRATIVE CASES.

By H. KNAPP.

A GREAT deal has been said and written of late on operative interference in acute middle-ear disease. It is a subject of high importance on which the aurist should have definite opinions, for he must be prepared to act on short notice in cases in which temporization may be fatal, whereas, on the other hand, aggressive, not to say meddlesome, surgery may inflict on the sufferer an operation that has not always proved devoid of danger. The question is how far and how long, in a given case, is conservative treatment permissible and commendable, and when is the operation justifiable and urgent. From my practice of the last eight months, I beg to select four cases which may serve as a basis for the consideration of the above question.

Where and how long is conservative treatment commendable ?

We may fairly say that every marked case of acute otitis media extends more or less into the mastoid. This, of course, is not a sufficient reason for operating. When the atrium is the chief seat of the inflammation and the perforation of the membrana tympani is in the pars tensa, nobody thinks of resorting to opening the mastoid, because the very great majority of these cases recover without it. Even when the symptoms of the mastoid are pronounced, we need not be in a hurry to operate. A certain degree of fever, especially in children, spontaneous pain, pain on mild or strong pressure, headache, puffiness of the integument of the mastoid, and even bulging of the upper-posterior end of the ear canal, may disappear and the patient recover perfectly by cold applications—the Leiter coil,—rest in bed, and cleansing the ear with cotton-tipped probes, and in profuse discharge *gentle* syringing with a weak antiseptic solution, and insufflation of small quantities of impalpable boric-acid powder. Paracentesis when the drumhead is bulging, or the perforation insufficient, should be one of the earliest as it is one of the most beneficial measures.

How is it when the inflammation is principally in the attic? The affection is then generally considered much more dangerous and very obstinate. Some authors declare that such cases never recover without operation. This statement, to my mind, goes too far, and in support of my opinion I beg to detail one out of a fair number of similar cases that are at my disposal.

CASE 1.—**Acute Purulent Otitis Media with Involvement of Attic and Mastoid. Perfect Recovery without Opening of Mastoid.**

Dec. 15, 1894.—Mr. J. St., a stout, healthy-looking gentleman of sixty-seven years of age, came to my office complaining of severe pain and deafness in both ears. He said that only once before he had suffered from ear disease, namely eight years ago. His left ear had been discharging for a time. During the last two or three weeks he had been troubled with a cold. A little over a week ago he took a Turkish bath. Five days later he suffered intense pain in his left ear. On the third day following, the left ear discharged, and the pain was relieved for a time. Last night it had returned and become most intense.

I found pus in the left ear canal. After removing it the upper-posterior wall of the canal was red and swollen, the drum membrane red, its upper-posterior part protruding down and forward, the seat of the perforation not distinct. The left mastoid process was tender on pressure not only immediately behind the upper part of the ear canal, but also on the tip and the posterior border. The right drum membrane was uniformly red, its posterior part bulging. He still suffered from coryza, his tonsils were swollen, and he had pain on opening his mouth. He could understand only loud conversation directly spoken into his ears. His urine was normal. There was little or no fever throughout the whole course of his illness. I ordered him internally tinct.

of nux vomica, and for his ears syringing with warm boric-acid water and insufflation of boric-acid powder, and recommended him to stay in bed.

Two days later, December 17th, he came again. Both ears discharged profusely. The same treatment was continued.

Dec. 19th.—More pain in and behind the ears and also pain in head. Left mastoid very tender. Discharge profuse. Patient entered the hospital, where the cleansing and sterilizing of the ears were done in the same way, and Leiter coils were applied to both. This treatment relieved him for two days, then the cold coils feeling no longer grateful were left off.

The discharge in the *right ear* stopped the day after, but the ear was painful and the upper-posterior part of the drum membrane considerably bulging. A free paracentesis was made through the bulging part. This liberated muco-pus. The discharge continued free for several days, then gradually subsided and stopped in two weeks, together with the pain in and behind the ear. The hearing gradually improved, much to the satisfaction of the patient.

The *left ear*, however, did not follow such a favorable course. On the second day of the application of the Leiter coil the patient not only felt more comfortable, in general, but there was an improvement in the condition of the ear. The drumhead appeared less swollen, and a large perforation, apparently in front of the handle, was noticed. Soon after the pain in ear, mastoid, and head returned. Shrapnell's membrane and the posterior-upper part of the ear canal were markedly bulging, whereas the otorrhœa had somewhat diminished. A free incision was made through the posterior portion of Shrapnell's membrane and the adjacent part of the tympanic membrane proper, down to the bone. On Politzer's experiment considerable pus was evacuated, and there was a free discharge of non-offensive pus, now for two weeks. The patient was kept in bed the greater part of the day ; he had but little discomfort, and began to hear better. On January 1, 1895, however, he complained of neuralgic pain in left side of head, especially in the occiput, and there was sharp pain produced by pressing upon the tip of the mastoid. In front of the tip there was an oval swollen gland, sensitive to pressure, and the skin seemed also a little tumefied. I ordered hot-water baths in the ear for half an hour in the evening, and kept the mastoid region covered with warmed absorbent cotton.

The next day the pain in head and mastoid was almost gone. Shrapnell's membrane and the whole posterior half of the *Mt.* bulging. Discharge free.

From now, January 3d, a steady improvement began. The membrana vibrans became pale and was applied to the promontory as was ascertained with a probe. *In the posterior part of Shrapnell's membrane, clear above the edge of the lower fold, there was a conical projection of proud flesh through which pus escaped, and when wiped away with a cotton-tipped probe, pus soon escaped through this opening again, either spontaneously or by pressure with a probe upon the surrounding parts.* For two or three weeks this crater kept discharging pus, in larger or smaller quantities, but on the whole with a gradually diminishing tendency. The discharging cone-like projection was for a whole week the only red part of the drum membrane, then it also paled, and dwindled away. At the time of the discharge of the patient, January 30, 1895, it appeared only as a closed small nipple.

After Politzer's experiment, the hearing for whispering voice was normal in both ears. All pain and discomfort were gone.

On February 2, 1895, the patient was perfectly well. *v* R = $\frac{20}{20}$, L $\frac{20}{20}$ — ; *h* R $\frac{2}{24}$, L $\frac{1}{24}$, which in a man of sixty-seven may be considered normal hearing.

At the time this is written, August 25, 1895, I can state that the patient's recovery has remained perfect and his hearing is as good as before the attack.

This case presents a typical example of mastoid involvement. The communication between mastoid antrum and attic was twice interrupted, but re-established by cold applications to the mastoid, and a paracentesis of the drum down to the bone. Deep paracentesis affords relief by the diminution of the engorgement of the soft parts in and around the antrum canal, and cold applications serve the same purpose by reducing the congestion.

The attic was not greatly affected, though the pus escaped through a perforation in Shrapnell's membrane, for symptoms of meningeal irritation, such as headache, and particularly occipital pain, were only moderately intense.

That the whole process was local, was proven by the almost total absence of fever.

How extensively the cells of the mastoid were involved it is difficult to say. The painfulness at the tip seems to indicate that a large part of the interior of the mastoid was involved, yet the aditus ad antrum proved sufficient for the escape of the pus.

Lately BROCA and LUBET-BARBON, in their admirable treatise *Sur les Suppurations de l'Apophyse Mastoide*, p. 64, describe a case in which the suppuration and caries affected chiefly the cells adjacent to the ear canal, which they call *les cellules limitrophes.* In these cases not only the end, but the whole length, of the posterior wall of the osseous canal is bulging. They may be cured by a thorough incision of the posterior wall of the canal, down to the bone. These cases are not unknown, and I have cured a well-pronounced example of the kind in the same manner and published it in the year 1893.[1]

Though recovery from acute purulent inflammation of the middle ear when the attic and mastoid prócess are involved, occurs without opening of the mastoid, we must not wait for it too long, for at any time a grave or fatal complication may set in, as the subsequent part of this paper will demonstrate.

In the next case spontaneous recovery seemed likely, but a sudden aggravation made the operation necessary, which was followed by recovery, but might better have been done earlier.

CASE 2.—Acute Purulent Otitis Media in an Anæmic Girl of Eighteen Years. Improvement under Antiphlogistic Treatment. Sudden Aggravation on the 23d Day of the Disease. Operation on the 24th. Discharged on the 34th for After-Treatment in the Dispensary. Recovery.

Rosa Rain, a girl of eighteen years of age, was admitted to the hospital May 25, 1895. A week previously a severe coryza had set in and was accompanied by pain and tinnitus in the *right* ear. Three days later she noticed a discharge from the ear, which relieved the pain to some extent. The last two days she had pain in the left ear also, with nightly exacerbations. The girl looks excessively anæmic, but her general health has been good.

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[1] See my paper on "Otitic Brain Disease," ARCH. OF OTOLOGY, vol. xxii., p. 149.

Condition on Admission:

The *right* mastoid region slightly puffy, tender on pressure, principally in the antrum pit (the well-known shallow depression near the posterior-upper part of the orifice of the ear canal, also called Désarène's pit or post-meatal fossa). The reddened and swollen drumhead has a large perforation in its lower and anterior part, through which creamy, slightly offensive pus is escaping. $h = \frac{12}{24}$; $v = \frac{10}{60}$.

The *left* ear is tender on pressure in the antral pit only. The whole drumhead is red and the membrana Shrapnelli bulging. $h = \frac{c}{24}$; $v = \frac{5}{60}$.

The patient has normal temperature but complains of headache.

Patient was kept in bed. Her right ear was gently syringed, wiped out, and boric-acid powder blown in.

Leiter's coil was applied to the right mastoid constantly.

May 26th.—Shrapnell's membrane of left side less bulging. Drumhead becoming pale. Right ear, less pain. Discharge free. Headache diminished.

May 28th.—Tenderness on pressure in both antrum pits.

May 29th.—Tenderness on pressure in antrum pit of the right side, only on the tip of the left. Cold applications only at times.

May 30th.—Tenderness in right antrum pit only.

May 31st.—Right Shrapnell's membrane projecting in posterior part. Incised.

June 1st—Large opening in R, *Mt.* Discharge free. Antrum pit sensitive. Pressure on tip, particularly its medial surface painless. Cold applications, not being grateful, left off.

June 4th.—R, less swelling of upper part of *Mt.*

June 5th.—Patient feels tolerably well. R, pain over antrum and posterior border. Left ear almost well.

June 8th.—R, pressure painful only at post. border. Discharge increased.

June 11th.—R, more pain, especially over tip. Polypoid proliferation of mucous membrane hanging down from attic and pulsating. Temp. 99.6°, pulse 106. Optic discs congested.

June 12th.—Rise of temperature, 100.5°. Mastoid region puffy.

Operation.—Incision from tip to temporal line, close to insertion of auricle. Periosteum stripped off. Bone even, vascular. A few blows with the chisel in the antrum pit discovered pus. On exposing the pus wherever found, the whole outer table of the mastoid had to be removed. The tip contained the greatest quantity of pus, the basal cells less, the antrum and middle cells least. The whole interior of the mastoid was filled with pus, granulations, and brittle bone, all of which was carefully scooped out until the dense white bony wall of the mastoid cavity was exposed on all sides, and carefully explored with a probe. No communication with the cranial cavity was found, nor with the digastric fossa, and pressing the upper part of the sterno-cleido-mastoid and digastric muscles between my fingers from below upward brought no pus into the wound. The probe passed readily from the antrum through its canal into the attic without giving the feel of rough bone. Enlarging of the antrum canal and any interference with the attic and tympanum were therefore omitted. Mastoid cavity filled with corrosive sublimate gauze.

June 13th.—Temp. normal, general condition improved, optic disc still slightly congested.

June 17th.—Patient steadily improving. Interior of eye normal.

June 28th—Patient discharged to be dressed in Dispensary.

Aug. 15th.—The wound closed in six weeks. The otorrhœa diminished rapidly and disappeared. Hearing improved gradually.

Aug. 28th.—No discomfort. Drumhead restored. Hearing normal, namely $h = \frac{24}{24}$; $v = \frac{20}{20}$, as in the other ear.

The remarkable feature in this case was that for twenty-two days there was the ordinary course of a purulent otitis media. That the mastoid was involved, was plain, but in no way more pronouncedly than in Case 1, which ended in recovery, whereas Case 2 showed, on the 23d day of the disease, a sudden rise of temperature and pulse, and puffiness of the skin of the mastoid region, after the sensitiveness of the antral region had diminished. On the part of the tympanic cavity the exacerbation was not signalled by a stoppage of the discharge, but by protrusion of granulation tissue from the posterior attic region. The mastoid, as the operation demonstrated, must have been intensely affected from the beginning, and only the width of the antral canal, affording sufficient drainage into the middle ear, warded off the danger so long.

From the symptoms it is clear that the mastoid complication, as is natural, began in the antrum, and, while diminishing in it, grew more active below and above it.

The same course showed very plainly in

CASE 3.—Acute Purulent Otitis Media Having a Mild Course for Two Months; Sudden Swelling of Upper Mastoid and Supra-Auricular Region, with Cerebral Symptoms; Opening of Mastoid; Pus in Tip; Rapid Recovery.

Ed. B. Lohr, aged thirty-three, a strong and healthy-looking workingman, was admitted to the hospital April 19, 1895. Two months previously acute otitis began in the right ear and was soon followed by discharge, which continued without causing much trouble until four days before admission. Then the mastoid began to swell, was tender on pressure, caused *severe headache*, and, the day before admission, *vomiting*.

When he presented himself at the clinic there were considerable redness and swelling, reaching from about an inch behind the ear canal an inch or more above the the auricle, as far as the temporal fossa. The region of the antrum and the tip of the process looked normal and were painless, whereas the swollen part was painful both spontaneously and on pressure. The ear discharged inoffensive pus ; the posterior-upper end of the wall of the canal was moderately swollen.

The patient was operated on the same day. Incision as usual from tip to above the auricle into the reddened swollen integument. The bone appeared healthy. The opening was begun in the post-meatal pit, and extended into the antrum. There was but little pus in the antrum and none in the cells above it, nor was there a fistula or anything abnormal in the bony part underlying the swollen region, except congestion. The cells below the antrum down to the tip, however, were filled with pus. The whole pus cavity was carefully cleansed, and, as its inner wall appeared healthy without a sign of communication with the digastric or the posterior cranial fossa, and a bent probe could easily be passed into the aditus ad antrum without detection of rough bone, I carried the operation no farther, tamponed the cavity, and put the patient to bed.

Two days later the dressing was changed. No pus. The postero-supra-auricular swelling diminished.

Convalescence uninterrupted. Discharged April 27th, eight days after the operation. Last seen in July, 1895. Membr. tymp. and hearing normal. Perfect recovery.

This case is simple but instructive. We may assume that the suppuration extended from the tympanum into the antrum, there exhausted itself, proceeded into the tip, and when it had exhausted itself there also, suddenly started in the base of the mastoid with the usual meningeal symptoms—headache and vomiting. Now the inflammation was cut short and the disease quickly brought to a favorable end by the prompt operation.

The fourth case, the last of this small series, ended in death, which, I think, might have been prevented if it had been possible for me to attend to the patient uninterruptedly.

CASE 4.—A Healthy Man, of Forty-four Years, had an Acute Purulent Otitis Media, after the Grippe; under Treatment with Paracentesis and Topical Remedies Rapid Improvement so that he Resumed his Business (Piano Teaching); Relapse of Otitis with Severe Cerebral Symptoms; No Operation; Death. Autopsy: Suppuration of Mastoid, Perforation into Posterior Cranial and Digastric Fossæ; Meningitis.

Mr. Aug. St., æt. forty-four, a man of healthy constitution, consulted me January 19, 1895, shortly after he had had the grippe. For the last week he had complained of pain and hardness of hearing in the left ear. I found the drumhead red; the posterior part bulging. This I incised at once. The pain was relieved and free discharge set in. Two days later, I found him comfortable, the membrana tympani, after removing the discharge, flat and pale, the incision still open. I ordered mild syringing with warm boric-acid solution, wiping the canal with absorbent cotton, and dusting impalpable boric-acid powder in it. He came to see me twice more, rapidly improving. He resumed his business of piano teaching.

In the middle of February his wife wrote me that his ear was worse again, and he felt so badly that he could not go to me, and asking whether I would come to the house. As this at the time was impossible to me, the patient living at a considerable distance, he was treated by his family physician, whom I met in consultation February 28th. He told me that the patient, two weeks previously, had had great pain in the ear and head, became unconscious for four days, then dragged his right leg, let things held with his right hand fall, and could not speak. For the last week he had been better. I found the patient up, walking about, quite rational. There was discharge from the left ear, the posterior wall of the ear canal was bulging, the mastoid normal-looking, no tenderness on pressure anywhere, the tip and its surroundings revealed no abnormity either to the sight or to the touch. His head was free, no optic neuritis, no weakness of limbs, speaks well and names objects promptly and correctly. He has had similar cerebral attacks, with convulsions, before he had his ear trouble, and his father had suffered from the same. His younger brother was a drunkard and died a few years ago, and our patient also indulged freely.

The symptoms distinctly showed a serious and extended affection of the left side of the brain. Considering the existence of purulent otitis, the most natural inference was that the suppuration has extended from the ear into the cranial cavity. Extradural or cerebral abscess was the diagnosis of probability, and only the present intermission and the family history made me refrain from the proposition of an immediate operation, but I told his physician that the operation should be done as soon as there was the least aggravation of the symptoms.

The second night there was a sudden, rapidly growing relapse of the brain affection, and the patient died in twenty-four hours.

The **autopsy** was made in the afternoon of the same day by myself, assisted by two of my hospital associates, and the family physician. It revealed extensive purulent meningitis, both of the base and convexity. In the left middle and posterior cranial fossæ there was a considerable extradural collection of pus which communicated, through a large opening in the posterior wall of the petrous bone, with the mastoid cavity and the digastric fossa. There was no sinus-thrombosis, but the wall of the sigmoid sulcus was blackish. The whole temporal bone was removed, to be examined in the laboratory. While removing it we noticed that a considerable portion of the extradural collection of pus had penetrated through an opening, of over 1 *cm* in diameter, in the inferior-medial surface of the mastoid process into the digastric fossa. Another opening of about 3 *mm* was found lower down near the apex of the medial surface of the tip of the mastoid process. This (Bezold) opening led into the cavity of the mastoid, and must have contributed to the accumulation of pus in the digastric fossa.

The outer table of the mastoid was hard and healthy, about 3 *mm* in thickness; the inner table was corroded and largely perforated. The interior of the mastoid was converted into a large pus cavity, which communicated with the posterior cranial and the digastric fossæ. The collection of pus in the digastric fossa, though quite considerable, did not, *intra vitam*, manifest itself by any symptom, nor was it, *post mortem*, noticed before the skull was opened. It lay surrounded by the perforated bones and the adjacent muscles, not burrowing down the neck. The pneumatic spaces over the mastoid and tympanum, at the base of the petrous pyramid, were large and also filled with pus.

The history of this case, completed by the autopsy, furnishes material for some important considerations.

First.—The *family history, though important in general, may lead to grave errors of judgment in special cases.* The course and termination of the affection do not require for their explanation the family history of cerebral attacks which deeply impressed the mind of the family physician. The first cerebral attack can be perfectly accounted for by the extradural abscess and the meningitis resulting from it.

Secondly.—The remarkable and so complete intermission, during which I saw the patient, was in all probability produced by the perforation at the roof of the digastric groove furnishing an outlet for the pus from the posterior and middle cranial fossæ. The pus being there confined, and the evacuation and drainage of the extradural abscess insufficient, the relief was temporary, the meningitis was only interrupted, not stopped, and its return caused the lethal exit.

Thirdly.—This observation very forcibly shows that an otitic meningitis, even when once fairly started, is not absolutely a fatal disease. The temporary, complete relief might have been permanent, if the liberation of the pus had been made thorough by an operation. The case is a confirmation of the opinion and experience of W. MACEWEN, who bases his statement on six successful cases where the symptoms warranted the diagnosis of purulent meningitis.[1]

Conclusions.

If I may draw some conclusions from the preceding observations, they may be as follows:

1. *There is in acute otitis media*, as H. Schwartze states, *no symptom which by itself constitutes a sufficient indication for a mastoid operation.* The most important symptoms are: local pain, spontaneous and on pressure; headache,rise or fall of temperature, dizziness, nausea, vomiting, stupor, aphasia, hemianopsia, optic neuritis, paralysis, coma. Neither is there any one symptom that in any case contra-indicates it, with the exception, perhaps, of deep coma.

If Schwartze says (*Handbuch*, vol. ii., p. 796), "In presence of pronounced choked disc, the prognosis of the operation always seems to be lethal," I beg to take issue with him, for I know from personal experience, which coincides with a statement made by Dr. C. J. Kipp, of Newark, N. J., many years ago, that choked disc from otitic brain disease may disappear with either operative or spontaneous recovery of the patient, say, for instance, in pyæmia from sinus thrombosis.[2] As to coma, there are a number of cases on record[3] where the operation was followed by recovery, and Schwartze himself has lately published[4] one of the most brilliant instances in which a patient was brought unconscious to the hospital, but made a perfect recovery from an operation for otitic abscess in the temporal lobe. That this may be possible also in acute cases may be fairly deduced from our Case 4, in which a complete intermission after a four days' unconsciousness and other cerebral symptoms is explained by the autopsy (see above). The case of Broca and Lubet-Barbon was acute, in a child of seven years.

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[1] See his fundamental and exhaustive work, *Pyogenic Infective Disease of the Brain and Spinal Cord*, 1893, p. 100, Case xviii., and p. 329.

[2] H. Knapp, "Ear Disease with Brain Symptoms," *Trans. Am. Otological Society*, vol. v., part 3, 1893, Case ii., p. 405.

[3] See Broca and Lubet-Barbon, *Les Suppurations de l'Apophyse Mastoïde*, Steinheil, Paris, 1895, pp. 29–31, Observation ii.

[4] *Arch. f. Ohrhk.*, Bd. xxxviii., p. 283.

2. *The indication for operating is derived from the ensemble of the symptoms and the course of the disease.*

In our Case 1, attic disease with mastoid involvement, the opening of the mastoid had been justifiable, and I was prepared for it every day, but, as I could watch the patient closely, I tried non-operative treatment, under which he steadily improved, and finally recovered completely. In Case 2, the course during the first three weeks afforded hope for a spontaneous recovery, then a sudden rise of temperature, swelling of the mastoid, and congestion of the optic discs appeared as danger signals which urged an immediate operation.

3. *Even if the patient does well, and seems cured, we should, for weeks and months, not lose sight of him, for acute purulent mastoiditis is a treacherous disease.* The antral part may be cured, but weeks and months later foci of suppuration may develop in the basal or apical part of the mastoid and in the cranial cavity that require immediate operation. This rule is supported by Case 3 and Case 4. I could add another case, recently operated on. The patient was apparently cured by the Leiter coil, etc., but a few weeks later returned with temperature 101°, glandular swelling in the parotid region, and facial paralysis. He had an extensive operation performed and is doing well.

4. *Whatever the symptoms be, we should, as a rule, begin the operation by opening the antrum, and then be guided by the conditions coming into view.* Our Case 3 showed the suppurative process terminated in the antrum and apex, but beginning at the base. Evacuation of the pus already formed and free drainage, aborted the inflammation in the basal part. If in Case 4 I had seen the patient during the fatal aggravation, an opening of the mastoid would surely have led me

into the cranial cavity, and by evacuation of the epidural abscess and drainage the patient's life might have been saved.

If in this article I have described only one case of spontaneously recovered acute middle-ear suppuration, and three which required operation, it does not, of course, follow that the majority of acute middle-ear suppurations with mastoid involvement require a mastoid operation. On the relative frequency of spontaneous recovery there is a very valuable statement by Bezold who, for years, has analyzed and described his clinical material with rare completeness and accuracy. In his exceedingly instructive monograph *Periscope of the Present Status of Otology according to the Results of my Twenty-four Years' Statistical Observations*, p. 104, he says: "During the years 1887–1892, in 701 cases of acute purulent otitis media, 62 operations were made, namely, 5 Wilde's incisions and 57 Schwartze's openings of the mastoid. From this experience it follows that about 9 per cent. of all cases of acute middle-ear suppuration are complicated with such a degree of mastoid inflammation as to make a spontaneous recovery improbable."

In view of the large series of operations that have been published of late, I feel like apologizing for reporting four cases only, yet even a small number of cases, if they well illustrate conditions useful to know and not yet generally appreciated, are worth publishing, for in the mastoid operation, which in otology has the importance of the cataract operation in ophthalmology, the smallest details should be considered and discussed from all sides.

SOME TUMORS OF THE EAR.

By A. SCHEIBE in Munich.[1]

(*With Plate VIII., Volume XXV., German Edition, 1893.*)

Translated by H. Knapp.

THE following tumors seem worthy of publication on account of their rarity.

I.—Fibroma at the Entrance of the Ear Canal.

April 13, 1886, a man fifty-six years of age, came to the clinic, having noticed a growing tumor in his left ear for six years. On examination a club-shaped, rather hard tumor, the size of a small walnut, covered by cutis, partially supplied with hair and glands, and ulcerated at a small place, was found. Removed with the galvano-cautery snare. No relapse these seven years.

Histological examination.—The bulk of the neoplasm consists of thick undulating bundles of connective tissue with spindle-shaped or oval nuclei and many blood-vessels. The surface of the tumor is formed by from five to fifteen layers of epithelium, covered with epidermis. All the constituent parts of the skin occurring on the medial surface of the tragus are represented, with the exception of sweat glands. Small crypts, with a well developed rete Malpighi and papillæ penetrate from the surface to the centre of the tumor. Moreover, it contains hair and very many sebaceous glands.
The tumor, therefore, presents a fibroma of the subepithe-

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[1] From the Anatomo-pathol. Inst. of Munich.

lial connective tissue with proliferation of sebaceous glands. Fibromas of the auricle and the entrance of the meatus, apart from those situated in the lobule, are very rare. Klingel[1] calls them adenoma sebaceum fibrosum. Kuhn,[2] on account of their warty appearance, classifies them among the papillomata, to which, however, our tumor could not be counted, because the surface was smooth and the papillary body represented only by a few crypts.

II.—Pedunculated Osteo-Sarcoma of the Ear Canal.

(From the private practice of Prof. BEZOLD.)

(*With Figs. I. and II. of Plate VIII.*)

E. v. H., seventeen years old, healthy-looking, called May 31, 1889. In the left ear impairment of hearing for a week; moderate, somewhat offensive discharge for four days; no pain. The osseous meatus is filled with a hardish tumor of irregular, red and white, excoriated surface, over the superior and posterior parts of which a probe can be passed, whereas at the anterior wall of the meatus the tumor appears to be connected with the bone. Politzer's experiment elicits no perforation whistle. $v = \frac{5}{800}$ *cm.* F a′ distinctly heard by A. C.; from the vertex it is heard in the diseased ear.

June 1st, thick fibrinous coat on excoriated surface of the new growth, after the removal of which, June 4th, a deep red, shining, somewhat lobulated surface comes to view. The tumor was removed with a snare. It was oval, the size of a bean, having been attached with a small root to the anterior superior wall of the meatus. *Mt*, the remainder of the meatus, and *v* now normal.

October 5th, at the place of the wound there was a small irregular prominence covered with unchanged cutis of the meatus.

The decalcified tumor is divided by one longitudinal incision passing through the pedicle. One half is then cut into longitudinal, the other into vertical sections. The growth is a combination tumor, its bulk sarcoma tissue pervaded with osseous trabecles extending from the pedicle to about its centre. The sarcomatous portion is rich in cells,

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[1] *Zeitsch. f. Ohr.*, vol. xxi., p. 189.

[2] Schwartze's *Handbuch der Ohrenheilk.*, Bd. ii., S. 575.

Zeitschrift für Ohrenheilkunde XXV. Taf. VIII.

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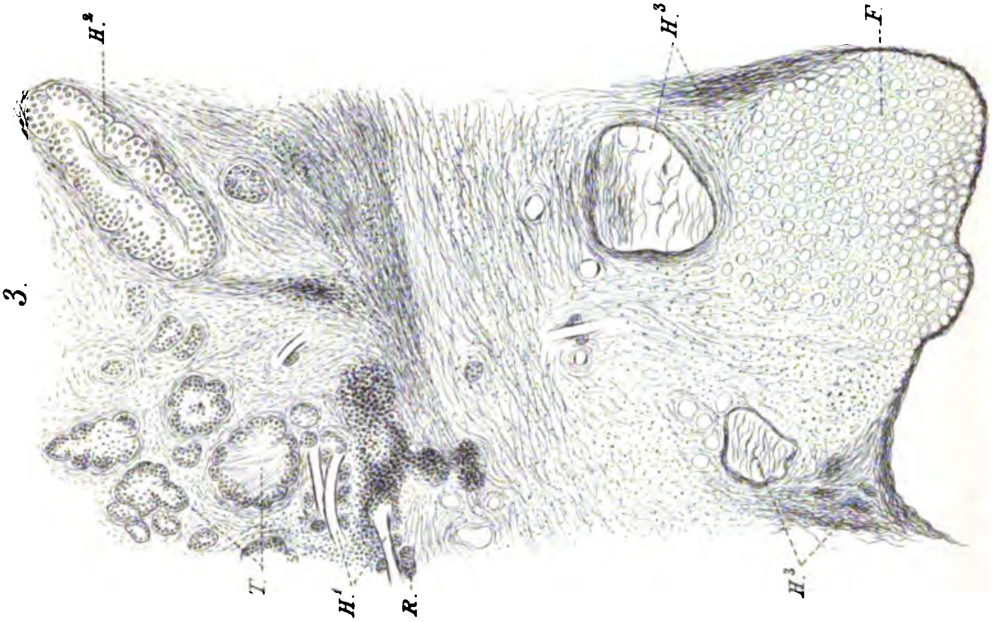

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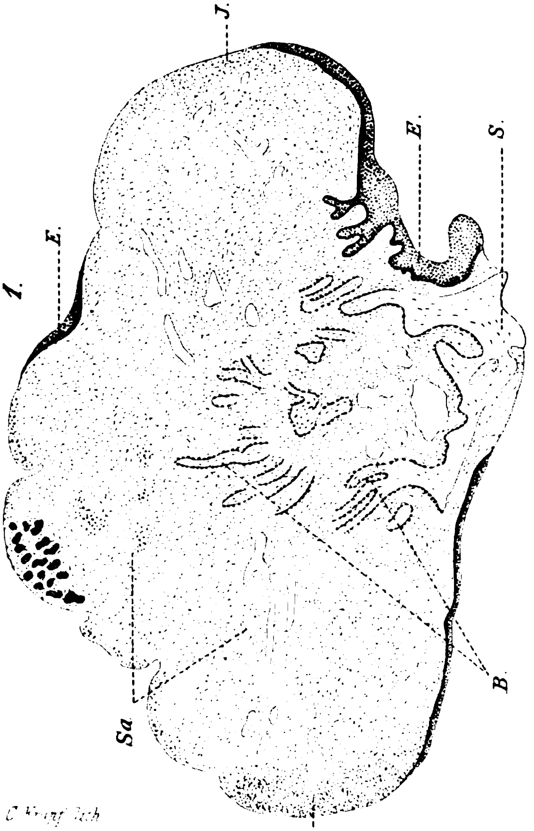

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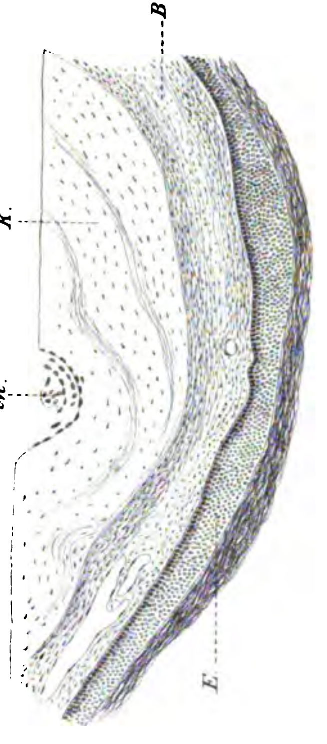

C. Krapf lith.

Verlag von J.F. Bergmann in Wiesbaden.

which mostly are spindle-shaped, with large nuclei. Here and there giant-cells are noticed. The arrangement of the cells are partially irregular, partially fascicular. The intercellular substance, except in the central portion, is scant. The vessels are rather scarce and thin-walled. The superficial strata of the pseudo-plasm are to a large extent infiltrated with small cells. The pedicle of the tumor consists of well developed bone, from which many spiculæ radiate through the tumor. Numerous osteophasts, some of which, situated in Howship's lacunæ, prove that, simultaneously with the growth, also processes of absorption are going on. A thick epidermic stratum covers the tumor.

Osteo-sarcoma of the ear canal, of which the specimen under consideration is a well marked example, is very rare. A few instances of this variety originated in the middle ear, and terminated fatally by diffuse extension. As originating in the meatus there is only a single case on record, described by Dr. A. H. Buck,[1] from the practice of Dr. Roosa. The patient was a girl of fifteen years. There has been no relapse in either case. This tallies with the experiences of general surgeons who ascribe to the osteo-sarcoma an essentially better prognosis than to the pure sarcoma.

Explanation of the Figures.

Fig. I. (very slight enlargement).

Osteo-sarcoma. Longitudinal section through the centre of the tumor and its pedicle.

S = Osseous pedicle.
B = Trabecles of bone with osteoplasts.
Sa = Sarcoma tissue.
E = Epidermis.
J = Small-celled infiltrations.

Fig. II. (slight enlargement).

Osteo-sarcoma. Half of a transverse section through the pedicle.

K = Bone.
M = Medullary cavity.
E = Epidermis.
B = Connective tissue and periosteum.

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[1] *Diagnosis and Practice of Ear Diseases*, p. 120, New York.

III.—Three Cases of Hairy Granulation Tumor in the Middle Ear.

(*With Fig. III. on Plate VIII.*)

Sept. 29, 1890.—S. Sp., priest, forty-one years, has suffered since childhood from left-sided otorrhœa, for many years lately only off and on. Five times a tumor was removed from the ear, the last three years ago. The ear has been dry since. Four weeks ago sensation of tension for which patient instilled almond oil. Discharge since.

Examination.—After the removal of pus and epidermic masses a pedunculated, soft, uneven tumor, the size of a small bean, is seen to fill the inner portion of the meatus. The pedicle seems to be in the antrum canal. I expected to have to deal with an ordinary polypus, but when the tumor was removed with the snare I was surprised that its surface was studded with a regular set of rather stout hairs. *Mt* and ossicles absent. A portion of the posterior wall of the osseous canal is likewise destroyed. The whole cavity of the middle ear as far as visible is lined with horny epidermis. Absolute deafness. Other ear in appearance and function normal.

Histological examination.—The basis-substance is granulation tissue, chiefly composed of small round cells, regularly disseminated through tumor, only here and there heaped in clusters. In the central portions there are thicker connective-tissue fascicles; the intercellular substance is scant at the periphery, the surface is made up in part of ganulation and regular fat tissue, in part of horny epithelial scales without a trace of the other constituents of the epidermis (stratum lucidum and mucosum). The scales are irregularly arranged, forming smaller and larger lamellæ, and penetrating also into the depth of the granulation tissue.

The hairs can be followed deep into the interior of the tumor. The hair follicles are surrounded by non-nucleated larger cells, granulation tissue, and here and there a few giant cells which seem to replace the hair follicles. Besides the hairs, numerous glandular formations, containing large giant-cells, are seen, especially in the centre of the tumor. A part of these formations are evidently degenerated sebaceous glands, the ducts of which can in some places be followed to the surface. We easily discover that some of the giant-cells are beset with prickles and reefs, characterizing themselves as follicles which have shed their hairs. Some connective-tissue fascicles and vessels show hyalin degeneration. A number of these vessels seem to contain no blood, but granular, yellow detritus; others are obliterated through endothelial proliferation.

That the hairs have not penetrated into the tumor from without, but have developed in it, is proved by the presence of hair follicles; further, by the fact that the patient reappeared three years later with another hairy tumor.

March 23, 1893.—After the discharge had stopped by itself, since the tumor was removed three years previously, it has returned and been offensive in the last ten weeks. A reddish-gray, uneven, easily bleeding, soft tumor, the size of a pea, occupies the inner portion of the osseous meatus. When removed it was again found provided with hairs. It was inserted into the lower part of the epidermoidally degenerated tympanic cavity. At the next examination, six days later, the latter was found completely dry. No trace of a root.

Only two similar cases are on record. Kuhn[1] saw, in a case of acute purulent otitis media, a tumor start from the innermost portion of the lower wall of the meatus, which on histological examination revealed the structure of ordinary granulation tissue, supplied with numerous hairs without follicles. He supposed that the hairs had penetrated into the tumor from without. The other case is described by Weydener.[2] To my great surprise I found that the hairy tumor of Weydener was taken from the same priest who furnished my own specimen. The neoplasm examined by Weydener was removed nine years ago, evidently having a great tendency to relapses. Weydener's description tallies with mine almost to the letter. Our case of a hairy tumor in the middle ear is thus far the only one known. Accidentally, however, I found a second case while examining old specimens of aural polypi. Its history, according to the journal of the Aural Policlinic in the Munich Hospital, is as follows:

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[1] *Transactions of the 58th Meeting of German Naturalists and Physicians*, at Strassburg, 1885, p. 509.

[2] These ARCH., vol. xiv.

May 31, 1887.—J. Ringseisen, student, twenty-four years old. In his eighth year earache without discharge for a short time, in his fourteenth year discharge lasting a year, intermittent since. Absence of *Mt* and malleus handle. The whole medial wall of the tympanic cavity, coated with thick, white epidermis. At the inner edge of the osseous canal a probe can be introduced several *mm* upward; hearing defective; other ear normal.

July 5, 1889.—The syringe expels a piece of snow-white cholesteatoma, the size of half a bean. A pale-red polypus of the same size is snared off. The whole tympanum is coated with thick epidermis, only in the centre there is a small granulation. A shred of epidermis hangs out of the antrum canal.

June 1, 1890.—For some time stupor and dizziness. During the time of his military service a larger quantity of epidermis had collected, after the removal of which no trace of a tumor was visible.

At the ***histological examination*** the tumor removed July 5, 1889, resembled so much the one above described that I may confine myself to note in what it differed from the other. The tumor evidently is of recent date and contains less connective tissue, sebaceous glands, hair follicles, and glands. Stout hairs are entirely absent. Some heaps of pigment resulting from former hemorrhages are to be mentioned.

In both cases the tumor was not congenital but grew on the soil of a cholesteatoma; this, however, does not explain the development of the hairs. It seems of no use to enter into any speculation about the pathogenesis of such cases before a greater number of them have been observed.

Explanation of the Figure.

Fig. III. (slight enlargement).

Part of a section through the hairy granulation tumor.

H^1 = hairs.
H^2 = hair follicle.
R = giant-cells.
T = sebaceous glands.
H^3 = horny cells (collection of scales.)
F = fat tissue at the surface.

ANOMALIES OF FORMATION OF THE MEMBRANOUS LABYRINTH IN DEAF-MUTISM.[1]

BY DR. A. SCHEIBE, MUNICH.

Translated by Dr. C. ZIMMERMANN, Milwaukee, Wis.

FOUR years ago I reported the anatomical examination of a case of deaf-mutism (these ARCHIVES, English, xxi., p. 12, Germ. Edition, xxii., Nos. 1 and 2). It showed atrophy of the posterior branch of the auditory nerve (nervus cochleæ, sacculi, and ampullæ inferioris) and peculiar changes of the membranous portion of cochlea and sacculus of both ears, which were due to malformations. The osseous labyrinth was normally developed. It was a unique case, although such conditions might have been found in quite a proportion of former autopsies, if they had been examined histologically. This would explain a number of post-mortems, with negative results in regard to the petrous bone, since not all cases are of cerebral origin.

In the last year Prof. Bezold kindly gave me the opportunity to examine two cases of deaf-mutism *post mortem*, in which I found almost the same condition in both ears as before.[2] By this repetition the condition gains in value.

Michael J., aged eleven years, died with symptoms of suffocation December 12, 1893, after being sick for six weeks with scarlet-diphtheria and hydrops. He was a pupil of the Institute for Deaf-Mutes, moderately talented, very excitable. Speech not good. According to official medical testimonials he was born deaf. Both his brothers hear.

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[1] From the Histological Institute at Munich.

[2] The case was demonstrated at last year's meeting of German naturalists and physicians at Vienna and illustrated by histological sections and drawings.

Autopsy of the head the day after death. The pia of the whole convexity shows marked whitish opacities and, when passing over the sulci, becomes more or less opaque. At the base the opacity gradually disappears. No changes around the root fibres of the vii. and viii. nerves at the medulla oblongata. The brain in general appears quite anæmic, but the veins of the occipital lobes are fuller than usual. Both hemispheres equally formed. The dura at the pyramids normal. The auditory nerves apparently not attenuated.

The right petrous bone was removed by a wedge-shaped cut and the cartilaginous portion of the Eustachian tube was severed at its lower extremity. The section appears normal, its lumen empty. The naso-pharynx contains exuberant adenoid vegetations, pending like large lobes. Oral breathing was frequently observed during lifetime though it was not constant. The left middle ear with *Mt* and petrous portion was chiselled out.

Left petrous bone : The external surface of *Mt* shows a very marked posterior fold. Shrapnell's membrane is very much retracted and as well as the posterior portion of *Mt* transparent with a reddish hue. After removal of the tegmen tympani and antri the mucous membrane of the aditus and antrum appears very hyperæmic, but moderately swollen. A central band especially is somewhat succulent and reddish-gray, which, coursing through the antrum, sends threads in all directions. The posterior portion and the floor of the tympanic cavity are covered by transparent, partly bloody mucus. The mucous membrane of the tympanic cavity is less reddened, and at the osseous portion of the tube it appears normal. *Mt* not essentially thickened. The capitulum of the stapes shows normal mobility, when touched with the probe.

Right petrous bone : Dura, aqueducts, and porus acusticus internus normal. A posterior fold can be traced at the external surface of *Mt.* The posterior inferior quadrant of *Mt* of yellow tint.

After removal of the tegmen tympani : Tympanic cavity, aditus, and antrum filled with thick viscid pus, which contains a small streak of blood at one place. The mucous membrane of the tympanic cavity, aditus, and antrum is rather thickened, grayish-red, succulent, and slightly granulating. Hammer and anvil are completely imbedded in the succulent mucous membrane. The mucous coat of *Mt* is not much thickened, but shows some radiating vessels. The mucous membrane of the osseous portion of the tube is devoid of swelling and injection. The mucous membrane at the promontorium is thickened and granulating. It fills the niche of the round window and envelops the capitulum of the stapes, which shows normal mobility.

A section of the pars mastoidea, cut by the saw, presents somewhat hyperæmic spongy substance without pneumatic cells.

Thus both middle ears were in a state of recent inflammation, as is the rule in autopsies after scarlet fever, according to our experience. For the examination of the labyrinth the petrous bones (which I received from Prof. Bezold) were hardened in Mueller's fluid and alcohol, decalcified by nitric acid, five per cent., and cut in sections after the usual further manipulations.

The histological examination of the middle ear revealed numerous glandular formations, lined with flat epithelium, in the mucous membrane of the tube up to the antrum, the openings of which on the surface can be seen in many sections. They contain a clear, partly fibrillar mass with a few star-shaped cells. The tensor tympani muscle exhibited a hyperplasia and partial degeneration in the middle ear, independent of the inflammation, similar to the condition in the former case of deaf-mutism.

Histological examination of the labyrinth : The auditory nerve, which, outside the temporal bone, appeared to be normal, shows atrophic changes in the labyrinth, limited to a portion of the posterior branch, the cochlear branch, principally in the first whorl. In the second whorl the lamina spiralis ossea is almost completely occupied by the nerve fibres, in the third whorl entirely. Therefore the nerve fibres can be stained almost normally through Weigert's method only in the latter, scarcely at all in the basal whorl, in which there are very few left. The ganglion spirale only of the first whorl is atrophic. No defects in Rosenthal's canal as in the former case.

There is only a trace of Corti's organ in the larger part of the basal whorl; in the upper whorls it is lower than normal, but of normal shape.

The changes of *Corti's membrane* and the *stria vascularis* are chiefly of interest. (For better information the drawings of the first case may be compared. These ARCHIVES, xxi., plate I. of vol. xxii., Germ. Ed.) Corti's membrane shows normal structure only on some small places (in both ears), but even there does not reach its normal size. In the whole remaining portion of the cochlea the membrane, otherwise lacking a sheath, is surrounded by a nucleated covering and is rolled up as rudiment in the internal sulcus spiralis or partly on Huschke's auditory teeth, without any insertion.

The stria vascularis throughout the cochlea is in an abnormal condition. In sections it is hypertrophic and projects like a knob or blister into the lumen of the ductus cochlearis. The vesicular elevation of the stria consists of an array of low cells, at least at its summit, just like the covering of Corti's membrane. It can be observed in several sections how the sheath is detached from Corti's membrane and how it converges towards that of the stria, finally becoming united with it. Thus a bridge is formed of the two nucleated membranes, the sulcus spiralis internus, and the ligamentum spirale, between the two laminæ of which the rolled-up rudiment of Corti's membrane is situated, diverging more or less from the sulcus spiralis internus towards the spiral ligament. This abnormal formation of a bridge may be observed at different places in the cochlea in like manner.

Reissner's membrane is depressed towards the ductus cochlearis and the bridge mentioned above, and partly touches its contents closely, as if it were adherent. The spiral ligament is not essentially altered.

Vestibulum, semicircular canals, and both aqueducts are normally developed. Only a few hyaline and colloid globules in the neuro-epithelium were found.

Inflammatory symptoms or products of former inflammation are nowhere to be found in the labyrinth.

If we compare the conditions of the former case, described four years ago, and the present, we find in both a hyperplasia of the tensor tympani muscle in the middle ear, and in the labyrinth atrophy of the auditory nerve, malformation or degeneration of Corti's organ, peculiar changes of Corti's membrane and stria vascularis, which, according to their nature, are to be explained as anomalies of formation. The occurrence of these anomalies in two deaf-mutes in the same manner is in favor of an arrest of development, as well as their being binaural. In the first case a sheath, containing cells, replaces in the sacculus the membrane of otoliths, which normally contains no cells. This sheath is sessile at the macula acustica like a fungus, and encloses numerous well preserved otoliths in spots of decalcination. This membrane is also to be ascribed to an anomalous development. Otherwise the two cases differ only in the different extent of the atrophy of the nerves. In the first case the nerves of the cochlea, the sacculus, and inferior ampulla (ramus posterior of Retzius) are atrophic, *i. e.*, those which are related to each other embryologically, in the last case only the cochlear nerve.

Therefore we have congenital deaf-mutism in both cases.

The autopsy did not reveal any other disturbances of development, unless the cysts in the frontal lobes of the first deaf-mute are to be taken as congenital.

How does our explanation of the conditions above described by the assumption of an arrest of development correspond to the facts of embryology? According to Koelliker the sulcus spiralis internus at a certain time of embryonic life is completely filled with very high epithelium. Corti's membrane develops from a cuticular secretion on its surface and on the crista spiralis. The stria vascularis is known to bulge as a prominence into the ductus cochlearis of the embryo. But a connection is not observed of the stria vascularis with the region of the sulcus spiralis internus, or a formation of Corti's membrane from the stria. The condition set forth above has become typical by its repetition in four organs of hearing, and calls for special attention in embryological studies.

In all cases heretofore published the malformation of the labyrinth involved the osseous capsule. Our case shows that an arrest of development may be confined to the membranous labyrinth, the osseous portion being normally formed.

A HISTOLOGICAL CONTRIBUTION TO DEAF-MUTISM DUE TO OTITIS INTERNA.[1]

By A. SCHEIBE, Munich.

Translated by Dr. C. Zimmermann, Milwaukee, Wis.

The pupil, Beck, of the Institute for Deaf-Mutes at Munich, eight and a half years old, died from scarlet fever with diphtheria November 17, 1893.

Beck *became deaf in his fourth year from a brain disease*, according to the statement of his parents and to an official medical certificate, as Mr. Voller, superintendent of the institute, kindly informed me. Beck was very talented, his speech normally developed. No heredity. His four sisters and brothers hear well.

Post mortem the day after death. Small hemorrhages in the subcutaneous tissue of the forehead. The blood-vessels of the meninges, especially in the posterior portions, are engorged.

Dura mater at petrous bone, porus acusticus, and sinus transversus normal, as well as the curvature and external surface of *Mt.* Translucent redness of the upper portion and along the hammer of left *Mt.*

Right ear : Tympanic cavity, aditus, and antrum empty; mucous membrane normal without any injection to speak of. Some delicate mucous folds in antrum and tympanic cavity. Capitulum of stapes movable by pressure on its crura by the probe. The reflexes at the base of the stapes change accordingly.

Left ear : Bloody serum and a small blood coagulum, which can be washed off, at the bottom of the tympanic cavity. The latter and antrum show recent pretty intense injection of several vascular ramifications. The injection extends to the osseous tube and is greatest at the isthmus, where the mucous membrane is succulent. The cartilaginous portion of the tube is free from injection and swelling. Mucous membrane of the tympanic cavity shows slight swelling, that of the antrum none at all. Both mastoids are the greatest part cancellous, in both numerous cells.

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[1] From the Pathological Institute at Munich.

For the examination of the labyrinth the temporal bones, kindly given to me by Professor Bezold, were hardened, decalcified, and cut in serial sections. The histological examination shows the mucous membrane of the *right middle ear* moderately infiltrated with small cells and injected by distended blood-vessels, principally in the osseous portion of the tube, at the bottom of the tympanic cavity and the promontorium. Traces of secretion, consisting for the greatest part of cast-off epithelia, are in the cells below the osseous tube and at the floor of the tympanic cavity.

Windows and intrinsic muscles normal. The mucous layer of *Mt* contains a few acinous glands near its anterior periphery in the region of the tubal orifice.

Left ear shows a similar condition, except the glands in *Mt.* The vessels exhibit recent and old changes, *viz.:* obliteration of several arteries, partial obliteration of the artery of the seventh nerve by connective tissue, and a peculiar alteration of the periosteum at the promontorium and the underlying osseous capsule of the labyrinth. The deeper portion of the latter is normal, as shown by the more intense staining through hematoxyline. There is a small circumscribed osseous hyperplasia at the promontorium, just below the oval window, where the periosteal layer of the mucous membrane is thickened three- or six-fold by augmentation of its fibres. The innermost stratum of the periosteum contains very many cells with one nucleus, similar to those of the osteoid tissue. Therefore the border has become indistinct between the bone (the surface of which is formed of osteoid tissue) and the periosteum on account of its partially granular structure. The surface of the bone is rough. The greatest portion of the changed bone is perforated by large irregular medullary cavities, which originated in the Haversian canals, as may be inferred from the round shape of the smaller ones. The marrow consists chiefly of mononuclear cells. In the lacunæ are found a few giant-cells and long thin needles, which are also seen in the strata of the mucous membrane. The bone-trabeculæ between the cavities and the bone surface, towards the tympanic cavity, partially consist of osteoid substance. Towards the labyrinth the cavities are bordered by normal bone.

The examination of the *labyrinth* reveals very conspicuous changes, which, unlike the ones in the middle ear, explain sufficiently the deaf-mutism. Remnants of inflammation in cochlea, vestibulum, and semicircular canals. The osseous labyrinth is intact almost everywhere. The membranous portions have been abolished and the lumen of the labyrinth is quite extensively filled with new-formed tissue and osseous substance. The new formation of tissue has taken place pre-eminently in the semicircular canals, less in the cochlea, in the vestibulum least.

Right ear : Cochlea : The greatest changes are in the basal whorl, especially in its vestibular portion. They gradually decrease towards the apex. The most conspicuous feature is the new formation of bone and connective tissue. The scala tympani contains much more of it than the scala vestibuli. The devastations, caused by the inflammation, are not so striking as the new formation of tissue, but they involve the most important structure, the ductus cochlearis. The lamina ossea and the septa between the convolutions remained intact.

Reissner's and Corti's membranes are wanting throughout the cochlea. Through the deficiciency of the former the ductus cochlearis and the scala vestibuli are united into one cavity. Corti's organ may be traced only in the first whorl, in the two upper whorls it retained its form, at least on some points the columns may be detected. The lamina membranacea withstood the inflammation in the greatest part of the cochlea. There is only one portion of it replaced by compact connective tissue (scar) at the commencement of the first whorl. In the latter part of the second and third whorls the lamina spiralis is torn off from the ligamentum spirale and adherent to the periosteum of the scala tympani at about a right angle. The ligamentum spirale is partly atrophic or defective in the apex of the cochlea, the stria vascularis comparatively well preserved.

New formation of tissue took place principally in the scala tympani and most exuberantly at the commencement of the cochlea. *The scala tympani is filled with compact osseous mass directly behind the membrane of the round window.* This is almost total, so that the lamina ossea has partially united with it, the secondary *Mt* totally. *Thus a complete fixation of the membrane of the round window has been the result of otitis interna only.*

The orifice of the aquæductus cochleæ is likewise closed by the osseous mass. Only a lattice work of the osseous trabeculæ and loose reticular connective tissue is seen in the rolled-up portion of the first whorl. The trabeculæ become less numerous in the farther course of the cochlea, and are replaced by reticular connective tissue, which entirely fills the lumen of the scala tympani, leaving free a few larger lacunæ. The meshes of the larger lacunæ of the connective tissue contain in diverse places peculiar large roundish cells arranged in chains, with pale, finely granulated contents. The nucleus is parietal and generally flattened. They are perhaps Steinbrügge's ring-cells, also seen by Schwalbach in otitis interna.

In the scala vestibuli the new formation of connective tissue, which is sclerotic and more compact, is confined to the modiolus, and the greatest part of the lumen is left free; new-formed bone only at the commencement of the cochlea. The periosteum at the intact portions of the lumen is not much changed.

The auditory nerve shows considerable changes. Nerve-fibres enter the cochlea quite numerously, but they become scattered in the terminal expansion of the lamina ossea and can hardly be stained by Weigert's method, and not at all in the inferior whorl. The lacking fibres are supplanted by connective tissue that is denser at the commencement of the first whorl and seems to be partially ossified.

The ganglion spirale is quite well preserved in comparison with the nerves. It is normal in the upper whorls and only in the lower one it is atrophic. Here the ganglion cells are either wanting, or the protoplasm of the remaining ones is more granulated or the staining of the nuclei is imperfect.

The vascular and lymphatic spaces of the modiolus are unaltered, save a slight hyperplasia of connective tissue.

The new formation of bone was most marked near the orifice of the aquæductus cochleæ, and therefore this place was examined more carefully. The osseous canal of the aquæductus cochleæ, the opening of which into the cochlea was obstructed, was, against expectation, permeable throughout, although narrow in its farther course, and the periosteum of the canal not much changed.

The *vestibulum* shows a destruction of its membranous structures. There is only little new-formed connective tissue or osseous tissue in its lumen. *The foot plate of the stapes is firmly* *fixed in the oval window by hypertrophied periosteum on the vestibular side.* Its mobility, consequently, is very much diminished, as found by the microscopic examination, although not completely abolished like that of the membrane of the round window. Vestibulum and cochlea are totally segmented by a compact membrane of connective tissue.

Only a small portion of the upper *semicircular canal* of both petrous bones is preserved, because it was chiselled off by mistake before hardening of the specimens. From the condition of the remaining semicircular canals, it easily becomes clear why it had been overlooked. Only a portion of the lower crus of the right posterior membranous semicircular canal is preserved, which is very much changed. The external osseous semicircular canal is filled with osseous substance, as if the latter had been poured into it. It would have been hardly found without knowledge of its situation. The new-formed bone may be recognized by the more roundish forms of the bone corpuscles and the smaller number of their branches. Macroscopically it would have been overlooked, just like the upper semicircular canal. I perfectly agree with Mygind, Moos, and Steinbrügge, that the supposed lack of a semicircular canal, which was formerly taken for an arrest of development by anatomists, is the consequence of a past otitis interna in many cases. The posterior semicircular canal only contains connective tissue ; its upper crus is moderately sclerosed by bone-formation. It is peculiar that the cicatricial tissue is more rigid and sclerotic only in this crus of the posterior semicircular canal, but it is reticular in the other crus and in the portion of the other semicircular canals which is not filled with osseous substance.

The narrowness and the tortuosity of the membranous *aquæductus vestibuli* do not allow us to ascertain whether its lumen is patent in its whole course. It certainly does not show any marked changes. But the osseous canal appears uneven at its opening into the vestibulum.

The nerves of the vestibulum and the ampullæ fit pretty well into their canals, but can be insufficiently stained by Weigert's method.

The dura, remaining on the specimen, shows only deviations in the process entering the porus acusticus internus. At the inferior wall of the latter the dura is thickened by augmentation of the nuclei, which have a roundish or oval shape. This had not been ascertained microscopically.

The changes in the *left ear* are of the same nature, but even more marked. The *cochlea* contains only a few nerve fibres that cannot be stained by Weigert's method. The ganglion spirale is more atrophic and, as well as the lamina spiralis ossea, shows at some points formation of lacunæ, so frequently associated with atrophy. Corti's organ is destroyed, save some low remaining cells in some places. The lamina membranacea is partially wanting; in the upper windings it is drawn toward the scala tympani and adherent to the cicatricial tissue with which the latter is filled. The chief seat of ossification is the scala tympani near the round window, just as in the right ear. The lumen of the scala vestibuli is extensively obliterated by connective tissue.

Vestibulum and *semicircular canals* also show marked pathological changes. Their membranous portions are totally destroyed. The ossification is more pronounced and passes directly from the medial wall of the vestibulum to the capsule of the labyrinth, so that the borders of the latter and the vestibulum partly disappear. *The left aquæductus vestibuli is totally obliterated by ossification, which extends to its surroundings.* The nerves of the vestibulum show plainly a quantitative atrophy, although not so extensive as in the cochlea. Only the external osseous semicircular canal is partially patent. The posterior is totally ossified. The upper one has been chiselled away as in the preparation of the right ear.

REMARKS.

The above description shows various changes. In both ears a recent otitis media was the result from scarlet fever with diphtheria during the weeks immediately preceding death. The left middle ear showed changes of longer standing, to be mentioned later on.

The destructions in both labyrinths were of older date and sufficed to account for the deafness, that led to deaf-mutism. They were to be considered as sequels of inflammation. The literature on this subject contains several similar cases, exhibiting not only the same destructions, but new formation of connective and osseous tissues present at the same points, viz.: the commencement of the scala tympani, directly behind the membrane of the round window, at the orifice of the aquæductus cochleæ, and the semicircular canals. The cases mentioned in literature could be attributed to cerebro-spinal meningitis. Schultze (*Virchow's Archiv*, 119, No. 1) leaves it undecided whether his case was due to meningitis or whether the process corresponded to poliomyelitis acuta. In our case meningitis also was assumed as the probable cause, inasmuch as the dura in the meatus auditorius internus was affected and the official medical certificate contained the statement that Beck became deaf in his fourth year from brain disease.

Meningitis may be propagated to the labyrinth on four different tracks: Through the two aqueducts, the meatus auditorius internus, and finally into the middle ear and from there through the windows into the labyrinth. The aquæductus cochleæ furnishes the most frequent entrance. Very likely it conveyed the infection in our case, as may be inferred from the very great ossification at its opening into the cochlea. That the aquæductus itself was comparatively intact may be explained by the assumption, as suggested by Steinbruegge, that the infection was owing to an infusion of micro-organisms by the perilymph and not by a direct propagation of suppuration.

The lymphatic and vascular spaces in the modiolus were scarcely affected in our case. Also the rather rare transference through the windows may be excluded, because the external aspect of the windows was perfectly normal, although other places of the tympanic cavity showed alterations of older date. But the great ossification of the left aquæductus vestibuli suggests a propagation on this track at least in the left ear.

The semicircular canals were very much involved, as also observed by others. Habermann explained it by the continuous recumbent position, in which the semicircular canals are the lowest part, where the secretion accumulates by gravitation. Steinbruegge surmises a better arrangement of circulation in the cochlea than in the periosteum of the semicircular canals, which has been proved by the investigations of Siebenmann and Eichler. Steinbruegge's explanation seems to me most probable. The recumbent position would also have acted on the corresponding points of the upper coils of the cochlea. It may however have some influence.

Bezold, who examined the inmates of the Institute for Deaf-Mutes, at Munich, found that vertigo could scarcely ever be produced in those who had become deaf from meningitis. This is due to the considerable changes in the semicircular canals. Vertigo may, however, be evoked in those cases in which the otitis interna did not affect the semicircular canals (Steinbruegge, Habermann).

The circumscribed otitis at the external side of the promontorium requires some remarks. The capsule of the labyrinth sometimes participates in the inflammation of the inner ear, as known from literature. This occurred in the region of the left aquæductus vestibuli in one case, which shows the remains of a former bone affection. The process in the wall of the promontorium, described above, had not run its course, but was still going on, as may be concluded from the osteoid tissue not yet ossified. Habermann described a similar bone affection of the promontorium in otitis media, but this was due to a recent inflammation of the labyrinth. Our case requires a different explanation, because the otitis involved the external (tympanic) not the internal (vestibular) side of the promontorium as in Habermann's case. The slight recent otitis media cannot be held responsible for the bone affection. In this case the obstruction of the blood-vessels by connective tissue, mentioned above, would remain unexplained. The similarity is remarkable to an affection of the osseous labyrinth and the stapedio-vestibular symphysis, in the so-called sclerosis of the middle ear, independent of otitis media, and described by Bezold (Second Congress of the German Otological Society, May 21, 1893), Politzer (Congress of Aurists at Boston, 1893), and the author (Sixty-fifth Congress of German Naturalists and Physicians, Sept. 12, 1893). Our case differs from that by being confined to one side, the disease not extending to the stapedio-vestibular symphysis. The periosteum in that region was more involved and the blood-vessels of a large portion of the middle ear were affected, if at all depending on the process in the bone. It was peculiar that it occurred in such early life, whereas the hardness of hearing due to sclerosis sets in later, according to our clinical experience. However it is to be considered that an affection of the promontorium causes no disturbance of hearing, as long as it does not invade the oval window. Therefore an explanation may rather be postponed, until more cases of unil[illegible] sclerosis have been examined anatomically. The[illegible] which heretofore have been examined anatomica[illegible] belong to the much more frequent bilateral "scleros[illegible] which may have a different genesis from the unilateral.

After this digression we may return to one condition in otitis interna which throws an interesting light on the result of the functional test in this affection. Our case shows, like those of other authors, that otitis interna may lead to serious changes in the sound-conducting apparatus even without implication of the middle ear. The membrane of the round window is completely fixed by ossification on its labyrinth surface and the plate of the stapes is pretty well impacted by a rigid layer of connective tissue on its vestibular side. Therefore it will not be surprising, if the result of the functional test in otitis interna may be in favor of a disease of the inner ear as well as of the sound-conducting apparatus. Schwabach (*Zeitschrift f. klin. Med.*, vol. xviii., Nos. 3 and 4) made the most careful functional test in his case of otitis interna. In diseases of the inner ear low tones generally are well perceived and the high-pitched poorly. Schwabach however found the perception of low tones (*c*) wanting and that of the higher (c^2) (512 *v.*) and highest tones (c^4) very much diminished. This may be due to simultaneous fixation of the sound-conducting apparatus, or, according to Helmholtz's theory, to greater changes in the apex than in the basal coils of the cochlea. Schwabach's case corresponded to the latter explanation, the changes in the sound-conducting apparatus being comparatively slight. I would point out, that the lacking perception of low tones (by aërial conduction) in otitis interna or its residuals may be due to an affection of the labyrinth surface of the sound-conducting apparatus as well as to an unusual localization of changes in the coils of the cochlea, according to anatomical examinations. The case of otitis interna of Schwabach, one of Bezold, and one of the author, possibly also caused by meningitis (These ARCHIVES xxi., p. 12, Germ. Edit., vol. xxii., Nos. 3 and 4), are hitherto the only ones in which the changes in the apex of the cochlea were more marked than in the basal whorl, whereas the fixation of the stapes and the membrane of the round window has been frequently described.

A CASE OF LIVING LARVÆ IN NORMAL AUDITORY CANALS.

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THE subject of the present clinical record has quite an interesting personal history. Four months previous to coming under my observation she had been delivered from her mother, at full term, through a Cæsarian operation. The mother is white; the child is a mulatto. It became an inmate of the Washington City Foundling Asylum, at which institution it was thriving, and from where it was indentured shortly after coming under my observation.

The patient was a feeble infant, age four months, well nourished and seemingly in perfect health. It had never been sick. Ate, slept, and performed all functions in a normal manner. For several days previous to my attention being called to her, the nurse had noted that she was excessively peevish, cried almost continually, slept very little, and could only be forced to take nourishment. In no way could this change in demeanor be accounted for. On the third morning a small area of dry blood was noticed in the right auditory meatus, and while inspecting this area, the nurse states that she saw what she supposed to be a maggot protrude from and then recede within the auditory canal. I saw the child for the first time at noon of the same day, July 22, 1890. I was informed that the child had given no evidence that the ears were diseased On inspection it was observed that the pinna and auditory canals were clear—the blood having been removed—and that the auditory canals appeared slightly swollen; but no pus, blood, or foreign body could be observed. I could elicit no history of previous inflammation of ear or purulent discharge from auditory canal. Deep illumination of auditory canal was extremely difficult, on account of slightly swollen condition of canal and excessively restless state of infant, but after several moments spent in careful inspection a moving reflex was visible deep in the auditory canal. I was inclined to believe this moving reflex to be pus, but after a few moments spent in watching, I noticed that the movement was too active, and that the body creating this reflex described a rotary motion rather than the undulating motion characteristic of a pulsating fluid. I was now inclined to believe the statement of the nurse, and, grasping an ordinary pair of knee ear forceps, succeeded in extracting one living worm from the right auditory canal. Through a similar procedure two large larvæ were extracted from the left ear. The removal was unattended with injury to auditory canal or membrana tympani. After drying the canal of the little blood at fundus of each canal the canals were closed with borated absorbent cotton. Examination on succeeding day showed no evidence of acute or chronic purulent inflammation in either middle ear. Auditory canals and membranes normal. No perforations or evidences of inflammation within or external to membrane. The larvæ were fully developed, large, and very active. They must have been within this child's ears for a period of three days or more.

All authorities seem to consider it somewhat difficult to remove these pests from the auditory canal, but I found the extraction of these extremely easy. A few moments after immersion in 90 per cent. alcohol they ceased active movements, and a few minutes thereafter were dead. In any case where extraction by forceps or syringing proved ineffectual, I should think, from my experience with alcohol, that the use of this agent would cause them to rapidly relax their hold, so that they could be readily syringed out of the auditory canal.

Some years ago when it was considered a crime to cure a "running" from the ears, or even to give them ordinary cleansing, the deposition of larvæ in striking neglected cases of chronic ear suppuration was not uncommon. Very few otologists of the present day have ever seen such a condition, and only know of such occurrences as matters of ancient history. The deposition of larvæ in normal ears is exceedingly rare. There is nothing in a normal, clear auditory canal to attract the fly, and therefore the deposition of its larvæ there must belong to those strange anomalies which present themselves at rare intervals. The manner by which the larvæ gained access to the auditory canal in this case can be explained by the possibility that the child fell asleep while nursing, thus allowing the bottle from which it was feeding to tilt over on its neck with the end of the nipple projecting in the region of the auditory meatus. The dripping of the milk attracted the fly which, noticing the opening of the auditory canals, therein deposited its larvæ.

Dr. W. E. Baxter, reports a case of living larvæ in a previously healthy auditory canal, in the ARCHIVES OF OTOLOGY, vol. xx., No. 1, and makes reference to cases reported by Drs. Kuntzmar and Gruening. A very instructive article on "Living Larvæ in the Human Ear" was published in these ARCHIVES in 1871 (*Arch. of Ophth. and Otol.*, vol. ii., No. 2, pp. 37–44, by Cl. J. Blake; further an article in Hufeland's *Journal der praktischen Medicin*, August, 1824, S. 108–11; and *N. Y. Ophthalmological Society Reports*, 1882.

THE ELECTRICAL TREATMENT OF TINNITUS AURIUM.

By H. LEWIS JONES, M.D.,

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Upon the reactions of the auditory nerve to electrical currents a method of treatment for tinnitus aurium has been founded. The investigations of Brenner form the basis of our knowledge of the subject.

In normal individuals a sensation of sound is produced at make and break by battery currents of a certain strength, and in certain abnormal conditions this response of the auditory nerve is much more readily evoked. The reaction formula follows that of voluntary muscle, namely, kathodal closure produces a sound more readily than anodal closure, while the opening shocks only produce a sensation of sound when the currents are of greater strength.

In normal individuals a current of five milliampères or more is needed to excite the first sensation of sound with the kathodal closure, while in some cases of tinnitus one milliampère may be sufficient.

The effect of the steadily flowing current is to maintain a sensation of sound if the kathode is applied to the ears, but the anode applied in the same way does not produce a sound, and when tinnitus is present it may be increased by the kathodal steady current, and diminished or stopped by the anodal. This is in accordance with what is known of the electrotonic effect of the poles; the state of anelectrotonus causing decreased irritability, and the state of kathelectrotonus increased irritability in the nerves near the respective poles.

Inasmuch as tinnitus aurium is often associated with an increased state of irritability in the auditory nerve it follows that a steady battery current, with the anode to the ears, may arrest it, and many brilliant cures of the symptom have been effected in this way.

Tinnitus may complicate nearly all the different forms of ear disease: for instance, it may depend upon the accumulation of wax, or it may be due to some other temporary disorder of the ear, which can easily be cured by proper local treatment, or it may occur in patients whose auditory apparatus is normal, as a part of some general morbid condition.

More commonly, however, some chronic ear mischief exists, and the removal of the subjective noises may be a matter of great interest to the patient, even apart from his deafness or other troubles.

Electrical treatment is able to do a very great deal for some cases, provided it be properly managed. If it is not done carefully the results will be unsatisfactory.

It has been objected to the electrical treatment that it is difficult, and that the results are uncertain, and at the best only temporary, but when so little can be done in other ways for these patients it is at least a gain to be able sometimes to relieve by galvanism the very distressing symptom of tinnitus. Out of a very large number of patients who have been under my treatment for noises in the ears, about one-third have been freed by a course of treatment applied in the way to be described. Some of them have certainly returned after the lapse of several months for further treatment, and in them the symptom has for the most part again yielded promptly to the renewal of treatment. Inasmuch as it is possible to determine at the first sitting whether the patient is likely to be relieved, one objection, viz., that of the uncertainty of the treatment, no longer holds good, and it is but right and proper that the patient should be afforded the opportunity of a trial of electricity if the symptom of tinnitus be troublesome.

To apply the current to the auditory nerve it has been recommended that the patient should sit down with his head resting on a table, in such a way that the ear to be treated is uppermost; the external auditory meatus can then be filled with water and the electrode introduced into it just so far as to dip into the water; the other electrode may be applied to the sternum, to the nape of the neck, or may be held in the hands, or it may be arranged underneath the other ear, the side of the patient's head resting upon it.

Of these several positions of the indifferent electrode the last is probably the worst, for it is difficult to see how the effect of the anode can be brought to bear upon one ear without at the same time producing a kathodal zone near the other ear; but wherever the negative electrode may be placed, there is always some likelihood, if both ears are very sensitive, that the ear not operated on may give responses, coming as it does within a region of virtual kathode when the anode is applied to the other ear, and *vice versa*, and indeed if one ear be much more sensitive than the other the application of a current to the less sensitive one may produce sounds in the opposite ear only, and then the normal formula of the auditory nerve may appear to be reversed, the responses being produced by a virtual kathode in the more sensitive ear when the actual anode is applied to the other, and so on, a state of things very likely to confuse the experimenter, particularly when his patient is not very intelligent. This reaction of the opposite ear has been called the "paradoxical reaction."

Fortunately the auditory nerve can be acted upon in other and simpler ways, and best of all by a bifurcated or *divided* electrode, which can be applied to both ears at once. At a pinch a binaural stethoscope answers very well, small metal discs being substituted for the ivory ear pieces; these ends may be applied just in front of the tragus and kept in place without unnecessary force by an elastic band or spring.

The parts in contact with the skin should not be of less diameter than two centimetres. If the surface of the electrode is too small some soreness of the skin may be produced at the points of contact. A pad of moist absorbent wool should be placed between the electrode and the skin. The indifferent electrode is placed at the back of the neck, where it is kept in position by the pressure of the clothing; and a galvanometer and a rheostat should be included in the circuit which enables the operator to introduce or remove a resistanee of 10,000 ohms quite gradually. When everything is ready the current is slowly and steadily raised by the current collector to five milliampères (the rheostat being at zero). As the resistance of the skin diminishes, the current will increase slowly, the galvanometer may be allowed to indicate eight or ten milliampères, each ear receiving half that current. If the current should be inclined to rise higher the rheostat must be brought into use to keep it at that strength. The patient should be instructed to pay attention to the noises and to give notice of any change occurring to them in the course of the sitting.

The effect of the application of the anode to the ears should be to diminish the noises, that of the kathode to increase them. The reverse sometimes happens, however, and therefore the patient must be tested to find out whether the current modifies the sounds. This is to be done by closing, interrupting, and reversing the current, while the patient attends to and reports the effects produced upon the tinnitus. If diminution of the sounds be produced the prospects of improvement are good, and the patient should be encouraged to persevere. If neither anode nor kathode alter the sounds, the prognosis is unfavorable, and it is hardly worth while to continue the treatment. In favorable cases the noises will diminish during the passage of the anodal current; if the current be too quickly reduced at the end of the treatment the noises may return as loudly as before, but if it be reduced very slowly and gradually this does not happen. On this account the rheostat is an important part of the apparatus; at the end of the sitting the current is to be reduced by the rheostat first and afterwards by the collector. If it happens that the tinnitus is dispelled by the treatment, at first the relief is quite temporary and the noises will probably return within an hour, but after each sitting the period of quiet is longer until finally they disappear altogether. If the sittings are repeated daily for the first week much time will be gained, afterwards it will be sufficient to apply the treatment twice a week for a fortnight or three weeks, or a month, according to the progress of the case.

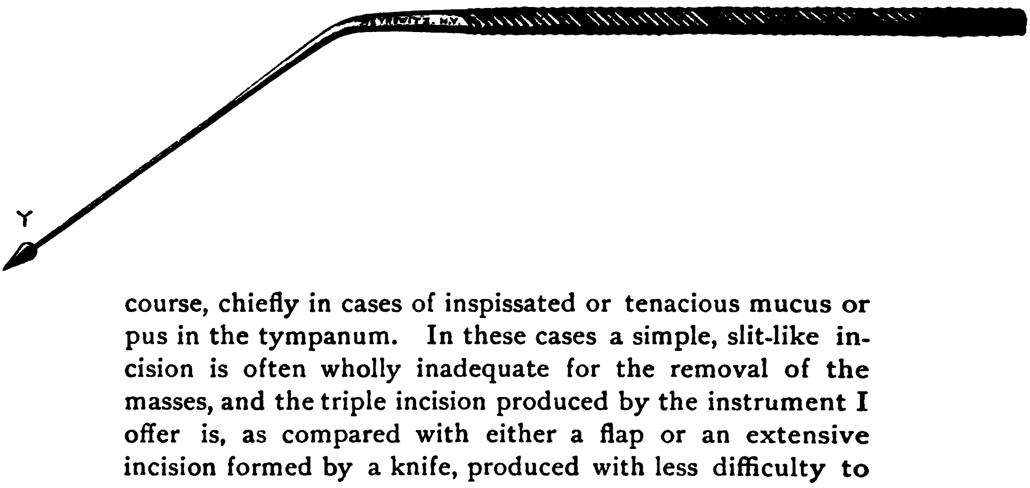
In testing the patient with sudden makes and breaks of current it must be remembered that currents of ten milliampères produce a very unpleasant sensation of shock and giddiness, when they are applied to the head. It is therefore wise to begin the test with currents of two milliampères, gradually increasing; and to give the patient warning of each make and break, telling him first what the effect of them will be. I am accustomed to depend very greatly upon the result of the first sitting. If the tinnitus can be modified or arrested, the case will be successful, and the treatment just described should be carried out patiently, but if the sounds persist whatever the direction or the strength of the current may be, then the case will be unsuccessful.

In progressive sclerosis of the middle ear, in which tinnitus is so common a symptom, the prospects of its cure by electricity are not very favorable. In testing these patients one may meet with a whole series whose bones are absolutely unaffected by the electrical currents.

A NEW MYRINGOTOME.

By THOS. H. SHASTID, A.B., M.D., Galesburg, Ill.

THE accompanying illustration is that of an instrument which I have found so useful that I wish to offer it to the profession. It is a myringotome, the operative extremity of which consists of three triangular blades set upon a shaft at equal intervals, and terminating in a common point. Each blade cuts on the principle of a Beer's cataract-knife. This instrument makes a triple incision—represented at the left of the figure—at a single puncture. It is of service, of course, chiefly in cases of inspissated or tenacious mucus or pus in the tympanum. In these cases a simple, slit-like incision is often wholly inadequate for the removal of the masses, and the triple incision produced by the instrument I offer is, as compared with either a flap or an extensive incision formed by a knife, produced with less difficulty to the operator and less pain to the patient since it is made at one single puncture.



The instrument is made by E. B. Meyrowitz, of New York City, to whom my thanks are due for skill shown in its construction.

MICRO-ORGANISMS IN THE HEALTHY NOSE.[1]

BY ST. CLAIR THOMSON, M.D., M.R.C.P., AND
R. T. HEWLETT, M.D., M.R.C.P.

"THE authors have been working at the bacteriology of the upper air-passages. Commencing with the nose they first of all investigated its bacteriological condition in a state of health.

"The results arrived at contrast in a striking way with those obtained by the majority of previous observers, and are in direct opposition to the opinion held by many physicians and founded chiefly on *a priori* reasoning. About 500 litres of air, bearing on a low average 1500 organisms, are inspired every hour. As all or at least the greater portion of this comes in contact with the moist mucous membrane lining the tortuous passages of the nasal fossæ, it has been taken for granted that the interior of the nose must show a rich profusion of micro-organisms. This conception is now widely adopted, and its general acceptance probably accounts for the scarcity of recorded observations of bacterioscopic examinations of the nasal cavity in a state of health.

"The literature of the subject is gone over in chronological order. Only two papers have been found devoted entirely to the bacteriology of the normal condition; all other references to the healthy state are made only incidentally in the course of researches on diseased conditions. The most diverse results have been arrived at both as to the varieties and abundance of organisms met with. Only two authorities—Loewenberg and Hajek—find a scarcity of bacteria in the nose; others record a greater or less variety and profusion. One observer finds the streptococcus of Fehleisen present in one out of every five healthy individuals, and another found the *Diplococcus pneumoniæ* (Fränkel-Weichselbaum) once in every four observations. This latter observer frequently met with the *Bacillus pneumoniæ* (Friedländer), the *Streptococcus pyogenes*, and the *Staphylococcus pyogenes aureus*, and not only in considerable numbers, but sometimes in pure culture.

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[1] An abstract of a paper read before the Royal Medico-Chirurgical Society, London, May 28, 1895.

"The method of examination adopted by the authors was that of cultivations on agar and cover-glass preparations stained with gentian violet. No attempt was made to differentiate the organisms met with. This research only dealt with the presence or absence of bacteria, and a simple method was adopted to insure uniformity of comparison. Thirteen healthy individuals were examined. Twenty-seven cultures and fourteen cover-glass preparations were made from the vestibule of the nose. Seventy-six cultures and thirty cover-glass preparations were made from the mucous membrane of the nasal cavity. The results are summarized as follows:

"i. In all bacterioscopic investigations of the nasal fossæ, in all researches as to the action of nasal mucus, etc., a clear distinction must be made between the vestibule of the nose and the proper mucous cavity. The former is lined with skin, and is furnished with hairs and with sudoriferous and sebaceous glands; it is not part of the nose-cavity proper, but only leads to it.

"ii. The neglect of this distinction may account for the discrepancy in previous observations on the subject. Contamination with the lining of the vestibule is difficult to avoid, even when this source of error has been realized.

"iii. In the dust and crusts of mucus and *débris* deposited among the vibrissæ of healthy subjects micro-organisms are never absent. They are rarely scanty in number; as a rule they are abundant.

"iv. On the Schneiderian membrame the reverse is the case. The authors do not assert that micro-organisms are completely absent; obviously some must occasionally occur, but under normal conditions they are never plentiful; they are rarely even numerous, and in more than 80 per cent. of their observations no organisms whatever were found, and the mucus was completely sterile.

"v. The occurrence of pathogenic organisms must be so infrequent, that their presence on the Schneiderian membrane can only be regarded as quite exceptional.

"Clinical experience bears out the above conclusions, and their application in practice is sufficiently obvious.

"In conclusion, the authors touch upon the problems suggested by the above, and refer to the questions they are at present engaged in solving."

THE TREATMENT OF INTRACRANIAL ABSCESSES FOLLOWING PURULENT DISEASES OF THE EAR.[1]

By THOMAS BARR, M.D.,

LECTURER ON DISEASES OF THE EAR, GLASGOW UNIVERSITY; AURAL SURGEON TO GLASGOW EAR HOSPITAL AND WESTERN INFIRMARY, ETC.

GENTLEMEN: Seven years ago at the memorable meeting of the International Otological Congress in Brussels, I had the honor of bringing before my confrères a new departure in the treatment of intracranial abscess, due to purulent ear disease. I refer to the operative treatment, which had at that time been recently inaugurated in Great Britain by Professor Macewen, of Glasgow; by Mr. Barker and Mr. Victor Horsley, of London; and by Mr. Caird, of Edinburgh. I narrated on that occasion the details of two cases of mine, operated on by Professor Macewen, in each of which an abscess in the temporo-sphenoidal lobe was recognized, reached, and drained with complete success. I then stated as my opinion that it might even yet be within the possibilities of surgery to expose the sigmoid sinus, remove pus from that region, and clear out septic thrombi from its interior; all this has now been realized. The inauguration of these operative measures proved a brilliant epoch in the history of surgery, and, during the seven years which have elapsed since our meeting in Brussels, very many lives have been saved in all parts of the civilized world by the adoption of the operative method of dealing with these complications.

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[1] Introduction to discussion at the International Otological Congress, held at Florence, 1895.

The Scope of Operative Treatment.

Gentlemen, at the present stage in the history of the operative treatment of intracranial lesions due to ear disease, it may be said that we are able to reach and deal successfully with the following conditions: 1. Abscess in the cerebrum, especially in the temporo-sphenoidal lobe. 2. Abscess in the cerebellum. 3. Purulent formations at the base of the skull, either (*a*) between the bone and the dura mater (the so-called extra-dural abscess), or (*b*) between the dura mater and the surface of the brain (the subdural abscess). 4. Infective thrombosis of the sigmoid sinus, even when secondary foci may exist elsewhere.

Preliminary Opening of Middle Ear.

In many of these conditions we are able to reach the abscess most conveniently from the cavities of the middle ear; in others we can deal with it more satisfactorily through a trephine opening in the lateral wall of the skull above or behind the middle ear.

In *all* of these conditions it is essential, as a preliminary operation, to explore the cavities of the middle ear by removing the outer wall of the antrum. With the cavities of the middle ear thus opened, we ought to scrutinize with a good light and a reflecting mirror the bony partition which separates the tympanum and antrum at their roof from the dura mater, as well as (and this is perhaps more important still) the bony partition at the sigmoid groove. The existence of a carious aperture, of an exposed dura mater or sigmoid sinus, or of granulation tissue sprouting from these will regulate our further procedure. The partitions of the roof and sigmoid groove, separating the middle ear from the temporo-sphenoidal lobe above, and from the sigmoid sinus behind are, without doubt, the two great pathways by which the infective matter effects its fatal entrance to the interior of the cranium. Fortunately they are both accessible, and readily accessible from the middle ear spaces, and by the preliminary and essential operation of opening these spaces we are able to remove the pus, the cholesteatomatous matter, the granulation tissue, the cario-necrotic debris, and the pathogenic organisms from the antrum and attic,—those primary and dangerous formations (the "dynamite" of Prof. Macewen), which bring the patient's life into peril. Well for such patients if, by the timely removal of these, the danger has been anticipated and averted!

Modes of Operating—The Rotating Bur.

In the presence of symptoms pointing to abscess, meningitis, or septic thrombosis, we must now from the middle-ear spaces, boldly and without hesitation, open the vulnerable and bony partitions and *follow up the path of invasion.* This is done with great safety and efficiency by means of the rotating bur propelled by a dental engine, supplemented by the use of a good sharp gouge. In exposing the cavities of the middle ear, as well as in opening these lethal partitions, I now rarely use the chisel and mallet since professor Macewen directed attention to the globular dental bur which, with the help of a gouge, I find more safe and satisfactory than the chisel and mallet. I show you here these burs, and I also show you temporal bones which demonstrate their effects both on the normal and diseased bone. In employing this method of breaking down bone it is very important to use burs which are very hard and sharp, and those made at Philadelphia are much the best. A dental engine of considerable power, worked with the foot, is required; the handpiece is held like a pen, and the lateral part of the bur is applied to the bone which, as the bur rapidly rotates, is raised in flakes. To prevent excessive heat developing, as well as to allow inspection of the parts, the bur should be momentarily removed every few seconds. It is possible with this instrument to avoid any structure in however close proximity it may be. As Professor Macewen observes: "Dark apertures or a membrane such as a pyogenic membrane, or the sigmoid sinus, or dura mater, are readily seen on the white polished surface made with the bur." By this mode of operating, even although there be an abnormality in the relative positions of the interior of the cranium to the middle-ear spaces—such as unusual depth of the middle fossa (brachycephalic skulls), or an unusually anterior and outer position of the sigmoid fossa,—the dura mater or lateral sinus need not be injured, although exposed. When we are working deep in the bone, and especially if the osseous tissue is soft, a sharp gouge yields effective aid, while a mirror on the forehead, reflecting good light into the deep cavity, is essential to safety. I would here emphasize the fact that by simple and judicious extension of the operation for exposing the cavities of the middle ear, familiar to all of us, we can, in many cases of intracranial complication from purulent ear disease, reach the seat of mischief and deal satisfactorily and safely with it, and in *all cases* such exposure of the middle ear (antrum and attic) with opening of the cranial septa should take place before proceeding to the use of the trephine.

Extra-Dural Abscess.

Having broken down the cranial partitions we shall find, in a certain proportion of cases, pus between the dura mater and bone, the extra-dural abscess, in one or other of the vulnerable situations. Above the tegmen antri or tegmen tympani, pus is often found extra-durally, the removal of which, without going deeper, brings about the disappearance of grave symptoms. Such extra-dural formations may be the precursors of temporo-sphenoidal abscess, just as similar formations at the sigmoid groove often lead to septic thrombosis of the lateral sinus, general septicæmia, or cerebellar abscess. Operations for the removal of extra-dural abscess have been singularly successful, and so I find that during these seven years thirty-nine cases have been reported of extra-dural abscess either at the tegmen or at the sigmoid groove operated upon and followed by recovery.

Septic Thrombosis of Sigmoid Sinus.

It may be said that extra-dural abscess in the situation of the sigmoid groove is generally associated with septic thrombosis in the sigmoid sinus, hence in all such cases the sinus should be carefully examined. If it is found to be occupied, as it generally will be, by a thrombus, and if symptoms exist pointing to disintegration of the clot and general septic infection, the blood current, if still flowing through the sinus, should be stopped, in order to prevent further systemic infection. This is achieved either by ligature of the jugular vein in the neck, as first proposed by Victor Horsley; or, as advocated by Macewen, slitting up the freely exposed sinus, removing the septic thrombus, stuffing with iodoform gauze, and by pressure bringing the outer wall of the sinus into contact with the inner, thus obliterating the venous tube. If there is reason to believe that the sinus is quite occluded, and the circulation entirely checked, the simple application of antiseptics and pressure may suffice. In the hands of Victor Horsley, Arbuthnot Lane, Ballance, and others, the operation of ligaturing the jugular vein in two places and cutting between has proved very satisfactory, and there are now thirty-six recorded cases of successful operations where septic thrombosis and general infection existed.

Operating upon Intra-Dural Abscess.

Further exploration, by opening the dura mater at the tegmen of the middle ear or behind the sinus, will depend upon the symptoms as well as the conditions found present. In the presence of symptoms of lepto-meningitis, such extension of the operation may reveal purulent formations between the dura mater and brain, in one or other of these localities, the removal of which may save the patient. No doubt the purulent exudation in such cases is generally too diffused to be susceptible of thorough removal, and these are certainly the least hopeful of all intracranial complications in ear-disease, yet the experience of Professor Macewen and others has shown that localized purulent collections in lepto-meningitis may be removed, with the results of saving the patient's life. If granulation tissue be seen protruding from the exposed dura mater, careful inspection should be made, when a sinus may be found leading into the arachnoid cavity. The discovery of such a sinus would call for the free opening of the dura and, in the event of purulent formation with perhaps ulceration or erosion of the surface of the brain being found, thorough cleansing and antiseptic treatment of the interior would give the patient a chance, as shown by the fact that sixteen cases of success are recorded of operations for the relief of purulent collections due to lepto-meningitis.

Cerebral or Cerebellar Abscess.

In the presence of symptoms pointing to abscess in the temporo-sphenoidal lobe or in the cerebellum (and the diagnosis of an uncomplicated abscess in the temporo-sphenoidal lobe may be said now to belong to the region of certainty), no time should be lost before we open the abscess cavity by means of a canula and trochar or hollow needle, remove its contents, and, as far as possible, cleanse and disinfect the interior. In dealing efficiently with such abscesses in the temporo-sphenoidal lobe, or in the cerebellum, a trephine opening is required in the lateral part of the skull above the ear, or, in the case of the cerebellum, behind the sigmoid sinus. In the case of temporo-sphenoidal abscess, we might, no doubt, by simply increasing, with the bur, in an outward direction, the size of the opening in the tegmen, reach, evacuate, and drain the abscess very thoroughly; and such an enlarged opening it would be well to make in any case. Yet it is found that, in order to get rid of the sloughs of brain tissue, loaded with septic organisms, generally found in such abscesses, a trephine opening through the wall of the skull, of half an inch in diameter, is also required in addition to the opening connected with the middle ear.

Mixed Cases of Intra-Cranial Disease.

"In uncomplicated abscess of the brain operated on at a fairly early period recovery ought to be the rule."[1] It is to be remembered, however, that many cases are of a mixed character. We often have abscess formation in the brain with lepto-

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[1] Professor Macewen in the work, *Pyogenic Infective Diseases of the Brain and Spinal Cord.* 1893.

or pachy-meningitis, or with septic thrombosis of the lateral sinus, or the whole of these conditions may exist at the one time in the same patient. If lepto-meningitis exists along with abcess in the brain tissue the symptoms of the latter are masked by those of the former, and we are apt to conclude that we have to deal with a pure meningitis, and decide against operation. My experience however would incline me to the view that, although the symptoms may be those of lepto-meningitis, our duty is to expose the middle and posterior fossa of the skull, and search for pus. A few weeks before leaving Glasgow, I had a case in point. A woman, twenty-eight years of age, had suffered from a purulent disease of the right middle ear from early childhood. In the month of July she was seized with symptoms of intracranial mischief. There were vomiting, intense pain all over the head, rigors on three occasions, persistently elevated temperature, quick pulse, delirium with unceasing movement, and entire absence of sleep. In fourteen days from the apparent commencement of the intracranial mischief these symptoms terminated in death. Immediately after seeing her for the first time, I opened the cavities of the middle ear with the bur, removed fœtid purulent matter and inflammatory debris. I also exposed the dura mater at the roof of the antrum and also the wall of the lateral sinus—these openings, you will see in the patient's temporal bone which I show you here, and they also illustrate the efficiency of the bur. There was no thrombosis of the sinus, and no pus between the dura mater and bone in either situation. As the symptoms did not seem to point to abscess in the brain but rather to meningitis I proceeded no farther. On examining the interior of the skull after death, while I found extensive lepto-meningitis on both sides with lymph and purulent deposit, there was likewise an abscess in the temporo-sphenoidal lobe, the pus from which had partially made its way through two perforations in the base of the lobe into the middle and posterior fossæ and also into the spinal canal. From the thickness of the pyogenic membrane lining the abscess, there was reason to believe that the abscess had existed for a considerable time before the onset of the symptoms of intracranial mischief, and I belive the lepto-meningitis was really set up by the escape of the pus into the sub-dural space. While the trephining of the skull would not have saved this patient at the time she came under my observation, it would perhaps, from the surgical point of view, have been more satisfactory had the collection of pus been exposed and drained as far as possible. It is even conceivable that, at a very early stage of the symptoms, the meningitis might have been checked and the patient's life saved by the thorough removal and drainage of the contents of the abscess and the antiseptic treatment of the affected parts. I would therefore say that the present trend of surgical opinion is that we shall rarely go wrong if, in the presence of grave intracranial symptoms evidently due to a chronic septic process in the middle ear, we explore the various pathways by which the disease invades the interior of the skull, and, if no extra-dural collection be found, or when found, if its removal be not followed by marked improvement, we open the dura mater, and examine the sub-dural space; and even then, if the results be negative, we need not hesitate to explore the temporo-sphenoidal lobe or cerebellum or both.

The record of work during the past seven years in the operations for cerebral and cerebellar abscess has been remarkable. At least 59 cases of cerebral and 7 cases of cerebellar abscess have been thus successfully treated. Many of these were associated with septic thrombosis of the sigmoid sinus, some with meningitis.

The Brilliant Results Achieved.

Gentlemen, it is rare in the history of the healing art to find within the limits of seven short years so brilliant a record of life-saving work as is presented by this department in the years separating the famous Brussels congress from what I believe will be the equally famous Florence congress. In the various medical journals I have found, in these years, records of 158 cases in which operations followed by complete recovery have been performed for the relief of the intracranial complications of purulent ear disease. I think we are justified in believing that, in addition, there have been many unrecorded cases. I know myself of some such cases. When we consider that most of these occurred in persons in early life or in the prime of life, we must feel that few branches of medicine can boast of a greater record of beneficent work. But, gentlemen, in the glamour of these great achievements we must not lose sight of the fact that our great aim and object should be to avert these dire results of purulent ear disease. By the enlightenment of the general public, through the fuller education of the profession in the gravity of those affections, by instructing the profession in the rational treatment of these affections, and by the development of those operative procedures calculated to remove hitherto intractable forms of purulent disease of the ear, we may in the future, to a great extent, prevent these intracranial complications. Indeed, I feel persuaded that the time will soon come when, with few exceptions, every purulent affection of the ear will be within the curative resources of our art.

Points for Discussion.

Finally, gentlemen, might I suggest as subjects for discussion the following points:

1. Is it desirable that the pure otologist should himself operate on the skull and brain in these intracranial complications of ear disease?
2. Should the interior of the cranium be opened even when the symptoms point to diffuse meningitis?
3. What is the best method of dealing with a thrombosed lateral sinus—ligaturing the jugular or incision and pressure?
4. What is the best method of perforating the bone while opening the cavities of the middle ear, or the cranial septa of the middle ear?
5. The value of operative treatment on the cavities of the middle ear for the cure of intractable purulent cases, as preventive of intracranial abscesses.

A CASE OF MULTIPLE OTITIC CEREBRAL ABSCESS.

BY DR. TREITEL OF BERLIN.

Translated by Dr. J. A. SPALDING, Portland, Me.

THE question of the frequency with which several abscesses may occur simultaneously in the brain may have excited renewed interest, owing to the recent discussions on this topic between Koerner (1), and Schwartze (2),[1] and because upon its answer depends to a great extent our prognosis for an operation. Furthermore, when we see two such competent authorities apparently differing in regard to the frequency of this state of affairs in the brain, it is well worth our while to add fresh material to the discussion.

Whilst Koerner (3) asserts that the simultaneous occurrence of several cerebral abscesses may be counted at such and such a percentage, Schwartze thinks that this condition is a rarity. But when we come to analyze their papers we find that there is but little difference after all. For Koerner found in ninety-four cerebral and cerebellar abscesses nine multiple in the same portion of the brain, *besides* six per cent. of multiple abscesses in different portions of the brain, making in all about fifteen per cent., and if we sum up all of Schwartze's cases, both clinical and from his Pathological Institute, we actually find nearly seventeen per cent. of multiple cerebral abscess.

The decision of the whole question depends of course upon cases verified by an autopsy, for when a few days after opening an abscess a second incision is necessitated for the purpose of relieving serious symptoms, and evacuates fresh pus, the case is simply one of ***retention*** by cerebral prolapse, as in the cases published by Knapp (4), and Truckenbrod (5).

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[1] Compare the literary references at the end of the paper.

Careful examination of the pages of these ARCHIVES shows only eleven autopsies in cases of cerebral abscess, five by Heimann (6), two each by Moos (7) and Truckenbrod (8), and one each by Rothholtz (9) and Knapp (10). In these eleven autopsies there were multiple abscesses in the brain in six cases or even in but five if we omit the simultaneous occurrence of a cerebellar abscess and an extra-dural accumulation of pus in one of Heimann's cases. On the contrary, in Heimann's first case, it is probable that a multiple abscess was first present and later became one extensive abscess, for, from any other point of view, extension over the frontal, temporal, and occipital lobes would be incomprehensible. I think that if this case had come to an autopsy earlier, a multiple abscess would surely have been discovered.

A recent case of this nature under my own observation will now receive brief consideration.

Mr. S., aged twenty-two, consulted me in October last, for violent headache, which had tortured him for several days and was so severe as to rob him of sleep. The family physician who had sent him to me for an opinion, thought that as there had been for years a chronic otorrhœa, there might be some connection between the latter and the severe headache. In point of fact the ear had of late suppurated more than usual, whilst previously it had been mostly dry or had secreted but little. The right meatus contained some fœtid muco-purulent secretion, on removal of which, a reddish surface came into view, which, on my attempting paracentesis proved to be the reddened mucosa of the promontory. There was no localized pain, nor could any be obtained by pressure at any spot over the entire calvaria. Not even the mastoid was tender to pressure. No vertigo, vomiting, or unsteadiness in walking, even with the eyes closed. Hearing of left ear normal; of right ear, loss of hearing for whispered voice.

The otorrhœa had originated in scarlatina in youth, and the patient had been always well till the recent pain in the head. The patient's father had been a stone-cutter, and had died two years before of pulmonary tuberculosis.

Not being able to make any diagnosis of cerebral otitic disease, I sent the patient home, but was called to him after three days as he had taken to his bed, because the headache persisted, and none of the usual remedies were of any avail. The patient, though sleepless for many days, was completely conscious, and complained of nothing but his head. Other symptoms, except very slight nausea at times, were absent. The secretion from the right ear was abundant. Some brain affection was suspected but of that there were no symptoms except the headache and the pulse. The pupils were equal in size, not contracted, of normal reaction, whilst the ocular muscles as well as those of the face and extremities were undisturbed. Temperature in the morning 37.5° (100° F.), and in the evening 38.3° (101° F.). The pulse measured 74, but every seventh beat was suspended. Bodily condition weak. Two days later slight stiffness in the neck on bending forward. A specialist in nervous diseases, called later in consultation, was unable to find anything upon which to base a decided diagnosis. He examined the patient ophthalmoscopically and decided that the fundus of the eyes and all the ocular reflexes were normal. It was decided to remove the patient to a hospital for an operation for cerebral abscess, provided its presence could be established.

October 16th.—Half conscious, violent pain in head, slight stiffness of neck, profuse fœtid discharge from right ear, pulse 75, resp. 20, temp. 37.9° (100° F.).

October 17th.—Soporous, reacts well to external impressions, complains of pains in head, especially on right side, pulse irregular, but averages 80. Respiration 20, no vomiting, no disturbance of speech, and no reflexes.

October 18th.—The left angle of mouth falls, and the left side of face looks paretic. Temp. 37.9° (100° F.).

October 19th.—Comatose. Facial paralysis more marked. Pulse irregular. No sugar in urine.

October 20th.—Death.

The autopsy shows pus oozing from an abscess in the lower surface of the right temporal lobe. The corresponding dura is discolored. The upper corner of the temporal bone shows an irregular loss of substance from which an offensive exudate issues. A probe can be passed through into the middle ear. The posterior portion of the temporal lobe, and the adjacent portion of the occipital lobe contain an abscess as large as an apple, together with several smaller ones farther behind in the occipital lobe. All of these abscesses are separated from the surrounding cerebral tissue by a yellowish-green membrane, whilst the brain tissue itself is œdematous and yellowish. The inferior cornu and Ammon's cornu are dislocated. Otherwise, the brain and the cerebellum are normal.

Lungs normal; slight fatty degeneration of heart.

After sawing the temporal bone, the defect above mentioned was seen to lead into a small cavity, surrounded by darkened bone and embracing the entire cupola. The labyrinth could not be examined microscopically, but with the naked eye nothing abnormal could be seen. Mastoid sclerosed, few cells, and these containing slight mucus.

REMARKS.

Was it possible in this case to diagnosticate a cerebral abscess, and then to save the patient's life? This question must be answered in the negative. The severe pain in the head, the irregular pulse, and the marked prostration led us early to suspect some cerebral disease, and the presence of the otorrhœa made a cerebral abscess seem very probable, but all local symptoms were absent, and none of the other possible brain diseases could be excluded. Thus; the case might have been one of tubercular meningitis; and there are cases in which a cerebral abscess has been diagnosticated, which upon operation turned out to be tuberculous meningitis. We once had in our clinique a child in whom when living a cerebral abscess was diagnosticated, but in which the autopsy showed cerebral tuberculosis. A cerebral tumor was improbable, because otorrhœa and tumor at the same time have never yet been observed in any patient of this age, and, besides, our patient had a hectic fever, which tended rather to show suppuration and no tumor. Beyond this, an extra-dural abscess could not be excluded with certainty, though there was no external swelling on the skull, and no fistula. The latter is rarely found until after a broad opening of the mastoid process. The sensorium was too little affected for a cerebro-spinal meningitis, the stiffness of the neck too slight, the temperature too low, and the abdomen not affected. The absence of rigor and local swelling in the neck argued against the presence of sinus-thrombosis, but the latter could not positively be excluded.

Once in the hospital, the symptoms became more distinct: the mind more affected, the neck stiffer, and finally opposite facial paralysis. Cerebral abscess in the right temporal lobe was now very plain, but the stiffness in the neck suggested an intercurrent meningitis, and the operation was postponed. At last the patient died.

The autopsy teaches us that the symptoms led us astray, and for that reason they must be farther considered, for the thickening and discoloration of the dura over the perforated tegmen was referable to a chronic otorrhœa. Stiffness of the neck, according to Koerner, so far as we have to decide between an abscess and meningitis, points to a cerebellar abscess, but our case shows an error in this respect. Inversely, we can have a basal meningitis without stiffness of the neck, as in Truckenbrod's case, in which the autopsy showed a purulent exudate at the base of the brain, most at the chiasma and the left motor oculi, without any stiffness of the neck showing itself during the patient's life. Hence, the latter symptom cannot be relied upon in the diagnosis of a cerebral abscess.

Neither is a solitary paralysis of the facial nerve of much value for local diagnosis. Generally, crossed paralysis of the facial or spasm of the same is a sign of a temporal abscess on the same side with the diseased ear. But it can also be produced by the distant action on the pons of a cerebellar abscess, and from that with the simultaneous presence of the stiffness of the neck we might diagnosticate a cerebellar abscess. So, too, abscess in the pons excites facial paralysis on the same or opposite side. But, on the whole, it is only by consideration of all the symptoms that a local diagnosis is rendered possible; we see too often that no great value can be placed on any one single symptom.

STATISTICS FROM THE PATHOLOGICAL INSTITUTE IN BERLIN.

From the history of six thousand autopsies which I have consulted in this institute, I find in all twenty-one cerebral abscesses, seven of which were due to otorrhœa, and fourteen to other causes, so that otitic brain abscesses form a third of all abscesses so far verified by autopsy in this region.

This agrees with the statistics of Pitt (3). All of these seven otitic abscesses were single except one case, in which an aural affection might possibly be excluded, as the second abscess lay on the opposite side of the brain from the ear that had caused the original abscess. One temporal abscess was so ramified that it probably became one by the confluence of several. Four abscesses were in the brain, three in the cerebellum. All the patients were adults. Only one was uncomplicated, and that in the cerebellum. Twice the abscess broke into the third ventricle, twice thrombo-phlebitis was excited, and five times meningitis.

This complication of affairs should not excite surprise, for there are cases in which the cerebral abscess has terminated fatally, and we cannot be sure that it was previously uncomplicated. But for cases which come late under observation, it is of great importance to know that cerebral abscess is generally complicated with other cerebral affections, and that, for this reason alone, no operations are of any avail.

Of the other fourteen cerebral abscesses from unknown causes, five were multiple. Some were undoubtedly due to pyæmic emboli, and in one case numerous small abscesses were discovered on the surface of the brain as a sequence of influenza. Two cases are of particular interest, as due to suppuration of the frontal sinus producing a frontal abscess. And at this point let me mention that in another case a similarly located suppuration produced meningitis and sub-dural collection of pus.

LITERARY REFERENCES.

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3. KOERNER. *Die Otitische Erkrankungen des Hirns*, 1894.
4. KNAPP. These ARCHIVES, xxii., p. 143, and xxiii., p. 155.
5. TRUCKENBROD. These ARCHIVES, xv., p. 176.
6. HEIMANN. These ARCHIVES, xxii., p. 33.
7. MOOS. These ARCHIVES, xxiii., p. 198; xxiv., p. 41.
8. TRUCKENBROD. These ARCHIVES, xxi., p. 158.
9. ROTHHOLTZ. These ARCHIVES, xiv., p. 133.
10. KNAPP. These ARCHIVES, xxiv., p. 161, and xxi., p. 239.

A NEW TYPE OF INFLUENZA OTITIS.

By Prof. O. KOERNER, of Rostock, Germany.

Translated by Dr. J. A. SPALDING, Portland, Maine.

THE widespread influenza epidemic of 1889 and 1890 was immediately followed by a large number of less extensive epidemics, and then by sporadic cases, and even to this day we see occasional cases of typical influenza. Now, just as after the huge epidemic, so, too, after the less, we meet with frequent complications on the part of the ear.

On looking over the abundant otological literature bearing on this topic, we are struck with the protean forms which the aural complication assumes. In addition to the common otitis media, which cannot be distinguished bacteriologically or clinically from the same disease due to other causes, we meet with special forms which had rarely been described before the epidemic of five years ago. Whilst the frequent appearance of ordinary otitis media in influenza was once explained by the diminished resistance to the bacilli excited by the epidemic, or by the assertion that the influenza offers a more favorable field for nourishing these bacilli, we may now suspect that the more frequently observed forms of otorrhœa observed during and since the epidemic were due to the influenza bacilli themselves. These forms, therefore, ought to be regarded as genuine influenza otitis. Amongst these, I find the following:

1. The form beginning with a hemorrhagic exudate and hemorrhagic pustules on the *Mt*, as described by Patrzek, Dreyfuss, Schwabach, Haug, and others.

2. The form first seen by myself, and later verified by

others, with swelling of the mucous layer of the drumhead, and knob- and bag-like proliferations on the drumhead so that the passage is almost obliterated. To this class belong the profuse granulations of the thickened mucosa, which bulge out through perforations in the *Mt*, are perforated in the middle, and, when snared off, sprout again abundantly. (Bezold.)

3. The primary central affection of the mastoid with secondary participation of the tympanum, as mentioned by Eulenstein and myself at the meeting of German aurists at Bonn in 1894.

To these three types I will now add a fourth, which has, I think, not yet been described, and which I have had a few opportunities to observe. Having seen cases so far apart as from Frankfort-on-the-Main to Rostock on the Baltic, it cannot be rare, and others may have seen the same thing. The patients were a man of thirty-six, a nurse in a hospital, and a boy of six.

Mr. U. was seriously affected with influenza in September, 1894, and on the third day the right ear became painful. On the next morning, perforation of the *Mt* with bloody secretion. The pain had mostly disappeared when I was called in on the eighth day, but abundant secretion still escaped from a large perforation in the posterior-inferior quadrant. The mastoid was sensitive to pressure. The pain and swelling yielded rapidly to ice-bags. At the end of a week a protuberance above the perforation was split open, and considerable pus evacuated. A similar swelling a week later was similarly treated. Early in October the *Mt* offered a remarkable aspect. The hammer could not be seen, and the *Mt*, grayish-red in tint, was hidden behind a half-dozen copper-red granulations about the size of a large pin-head. The aspect was just as if granulations of the mucous layer were pushing forward the drumhead from behind. Auscultation failed to discover any exudate, and the hearing was very good. In a day or two the redness had disappeared from most of the membrane, the hammer was again visible, the granulations had disappeared, and in their place were ring-like hemorrhages corresponding to the margins of the former granulating surfaces. The rings were not closed, but open on one side, and on the grayish-red background of the *Mt* they offered a picture bearing the greatest possible resemblance to a panther skin.

The nurse, with temperature of 102°, was on the fourth day of the influenza attacked with violent pain in the right ear, but diminishing on the following day on the appearance of a sero-hemorrhagic discharge. Small hemorrhages on the gray background of the bulging *Mt.* A paracentesis evacuated abundant secretion. The hemorrhages continued on the next few days, but fever and pain were absent. On the seventh day after the paracentesis, panther-like spots on the *Mt.* Ten days later, drumhead and hearing normal.

The boy was attacked with pain in both ears, most severe in the right on the third day of the influenza, and on the fifth day he was brought to the hospital with temp. 104°, insensible, and occasionally delirious. Drumhead flesh-red, hammer indiscernible, and a white spot indicating pus. Paracentesis was at once done, pus evacuated; the patient soon improved, and the perforation closed. The tonsils, appearing much enlarged, were abscised with Gottstein's knife, but the operation was followed with pain in the left ear, demanding repeated paracentesis. The *Mt* soon cleared up, and showed appearances similar to those in the two other cases. Hearing was in due time entirely restored.

This state of affairs, characterized chiefly by the secondary ring-shaped hemorrhages, bears some resemblance to those forms of influenza otitis already described by other authors. The primary hemorrhagic form is suggested by the ring-shaped hemorrhages appearing after the evacuation of the exudate, or paracentesis, whilst the proliferation of the mucosa through the *Mt* may stand side by side with the prolapse of the mucosa described by Bezold.

REPORT OF THE OTOLOGICAL SECTION OF THE BRITISH MEDICAL ASSOCIATION MEETING IN LONDON, WEDNESDAY, JULY 31ST.

Sir WM. DALBY, President, after a short preliminary address, showed a case of objective noises in a young woman; the noise, of a creaking character, synchronous with the pulse, could be easily heard by approximating the ear to that of the patient. No satisfactory explanation of the condition could be given.

Mr. CRESSWELL BABER also showed a somewhat similar case,—a young woman in whom the noise, of a soft, blowing character, synchronous with the pulse, could be heard by means of the auscultation tube. He thought the sound was probably muscular.

Dr. DUNDAS GRANT then read a paper on the "Treatment of the Various Forms of Nerve Deafness." After giving a classification of the various forms of nerve deafness he discussed their treatment. With regard to pilocarpine he considered it useful in labyrinthine effusions, if used before organization of the effusion had had time to occur.

Dr. MACNAUGHTON JONES followed with a paper on "Some Etiological Considerations on the Treatment of Nerve Deafness," in which he drew attention to the fact that middle-ear disease often accompanied disease of the internal ear; he found pilocarpine and electricity of no service.

In the discussion which followed, Dr. BARR said he had been disappointed with the results of pilocarpine and thought that any good which resulted was due to a mental effect. He had used it in cases of recent labyrinthine effusion, when vertigo, tinnitus, etc., were present.

Dr. LAW referred to the treatment of syphilitic cases with mercury and iodide of potassium, and mentioned two cases of deafness during secondary syphilis in which the deafness defied all treatment.

Dr. Woods had had similar experiences.

Mr. E. H. Bennett reported three cases in which slight improvement had occurred under pilocarpine, and related the case of a child who, after being treated for keratitis, became deaf, the hearing being practically restored under pilocarpine and politzerization.

Dr. Milligan and Dr. Warden had both used pilocarpine with little result.

Mr. G. Field was satisfied with the good results obtained by pilocarpine in properly chosen cases ; and had had many successful cases.

Sir Wm. Dalby regretted that Mr. Field could not give scientific details of his successful cases.

Dr. Dundas Grant and Dr. Macnaughton Jones then replied.

Dr. Milligan, of Manchester, in dealing with tuberculous disease of the middle ear and its adnexa, said that tubercle more often attacked the middle ear than some writers had believed. Painless perforation of the membrane, especially when complicated with facial paralysis, was usually an indication of tubercle. He had operated on ten cases of mastoid suppuration in children and had inoculated guinea-pigs with scrapings ; in eight out of ten tubercular infection followed. Dissected guinea-pigs, drawings, microscopical sections, etc., shown.

Dr. Barr then dealt with the treatment of intractable suppuration of the middle ear by operation through the mastoid. He uses and strongly advocates the globular dental bur in operating, followed by the gouge. He found that the discharge ceased in from two to eighteen months after operation.

Dr. Bronner read the notes of five cases of attic disease, treated by modified Stacke's operation, in which ordinary treatment had failed.

Drs. Law, Milligan, Woods, and Urban Pritchard took part in the discussion which followed.

Dr. Law showed a series of forty anatomical specimens sent by Professor Politzer.

THURSDAY, AUGUST 1ST.

Professor Macewen read a paper on "Cerebral Complications in Relation to Middle-Ear Disease."

After treating of the difficulty of localizing cerebral complications, he insisted on the necessity for early diagnosis of tubercular disease of the middle ear, and of bacteriological examination. All the diseased parts should be thoroughly dealt with at the operation, and the antiseptic method should be strictly carried out. He preferred the bur with dental engine to the chisel in perforating the bone. He thought that by proper treatment extension of infective disease to the cranial contents from the middle ear could be prevented.

Dr. LUC cited "a case of cerebellar abscess, secondary to a cholesteatomatous deposit in the mastoid antrum."

Mr. MARMADUKE SHIELD, and Drs. MILLIGAN, BARR, MCBRIDE, and Mr. BALLANCE then spoke in reference to tubercular disease of the middle ear.

Dr. URBAN PRITCHARD, after dwelling on the importance of early and thorough treatment of chronic middle-ear suppuration in order to obviate future necessity for antrum and intercranial operations, strongly supported Dr. MACEWEN in his insistence upon strict antiseptic precautions when operating.

Dr. DUNDAS GRANT and Mr. WOOD joined in the discussion.

In his reply Professor MACEWEN thought that operations should not be withheld even in the most advanced cases.

Dr. URBAN PRITCHARD at King's College Hospital, showed the following cases which had been treated by him in his hospital practice:

1. A girl whose malleus had been extracted for caries, resulting in perfect healing and almost perfect hearing.

2. A man who had been operated on for a temporo-sphenoidal abscess several years previously.

3. A man who had been operated on three years ago for cerebral symptoms secondary to middle-ear suppuration, an abscess having been found in the groove of the lateral sinus.

4. A man who, after an acute otitis, had had a subdural abscess in the posterior fossa which was operated on with rapid recovery. In this case the symptoms had been very slight and the temperature never above 99°.

5. A girl whose mastoid antrum had been opened on account of severe and long-continued pain, which completely disappeared after the operation.

6. A man who had a hyperostosis of the meatus, completely occluding it, which had been removed by means of his special trephine and dental engine; the meatus now appearing normal.

He also exhibited specimens of aspergillus which had occurred in his practice, and commented on its rarity in England.

FRIDAY, AUGUST 2D.

Mr. CARMALT JONES read a paper on "Turbinotomy, in Connection with Tinnitus," and showed an instrument invented by him for the purpose. He claimed good results from the operation, which he had performed some 500 times.

Dr. BRONNER and Dr. MACNAUGHTON JONES doubted the necessity and efficacy of the proceeding.

Dr. F. SPICER had seen good results.

Dr. WARDEN and Dr. URBAN PRITCHARD thought the operation should not be lightly undertaken.

Professor GUYE read a paper on a not yet described form of "Rotatory Sensation in Patients Suffering from Labyrinthine Disease," relating the case of a patient who, during an attack of Ménière's symptoms, complained that objects appeared to turn round in the direction of the hands of a clock: and if the rotatory sensation was slight the patient made an involuntary movement in the same direction; if severe, in the opposite direction.

DR. URBAN PRITCHARD, Dr. BARR, and Dr. BRONNER spoke on the subject.

Dr. MACNAUGHTON JONES then read a paper on "The Various Forms of Ménière's Disease." He thought pilocarpine was occasionally of use in these cases.

Professor GUYE thought that in many of these cases there was a removable cause present.

Dr. BARR and Mr. CRESSWELL BABER discussed the paper.

Dr. URBAN PRITCHARD urged the necessity of accurate diagnosis in Ménière's disease.

Mr. CRESSWELL BABER showed a dummy which he had had made for demonstrating post-nasal growths.

Dr. PEGLER exhibited sections of hypertrophied turbinated bodies.

Mr. LAKE showed specimens, demonstrating the connection of the membrana propria of the membrana tympani with the periosteum.

Dr. WARD COUSINS showed improved ear-drums. In the discussion which followed, general preference of the cotton wick to any other form of ear-drum was expressed.

After a vote of thanks to Sir WM. DALBY and the honorary secretaries, the session closed.

SECTION OF LARYNGOLOGY.

Professor GUYE opened a discussion on "The Etiology of Mucous Polypi of the Nose." He agreed with Zuckerkandl on the whole, but in many cases no cause was to be found.

Dr. LUC thought catarrh and occasionally bone lesion were sometimes the cause, but in most cases they appeared to arise spontaneously.

Dr. MCBRIDE considered that polypi growing from the middle meatus and papillomatous hypertrophy of the infer. turbinal were similar ; the former being converted into œdematous fibromata, the force of gravity being concerned in their production. Neither inflammation nor empyema could account for all cases. He also thought that irregularity of the mucous membrane might probably have something to do with their causation.

Dr. HODGKINSON had never observed necrosis, and said empyema was not a necessary factor.

Dr. SCANES SPICER thought necrosis was rare in ethmoiditis.

Dr. WM. HILL thought that Woakes's theory was not altogether wrong, and said that "myxomata of the nose and ear were much alike."

Dr. BOSWORTH was surprised that any one should take Woakes's theory of necrosing ethmoiditis seriously.

Dr. MORIZ SCHMIDT thought polypi were due to inflammation of the mucous membrane and muco-periosteum.

Dr. J. N. MACKENZIE inclined to the inflammatory theory.

Dr. DALY thought that suction in inflammatory conditions was a factor.

Dr. NEWMAN said polypi were never myxomatous and thought œdema and hypertrophy of the mucous membrane were causes.

Mr. LAKE had never seen a myxoma or œdematous fibroma of the nose.

Dr. WATSON WILLIAMS thought bone changes were the cause.

Dr. DE ROALDES stated that polypi were more frequent in whites than in blacks, and that catarrh and empyema were also less frequent in the latter.

REPORT ON THE FOURTH MEETING OF THE GERMAN OTOLOGICAL SOCIETY, HELD AT JENA, JUNE 1ST AND 2D, 1895.

By ARTHUR HARTMANN, Berlin, and SELIGMANN,
Frankfort-on-the-Main.

Translated by Max Toeplitz, New York.

The meeting of the German Otological Society of this year excelled by the large attendance and a series of interesting papers and discussions. It proved that the society has full vitality and its creation met a long-felt want. The resolution passed by the meeting on the separate publication of the transactions expresses to the outside world the independent position of the society and its importance for otology. The preparations of the meeting were excellently made by Prof. Kessel of Jena. A small collection of instruments and apparatuses was exhibited in the rooms adjoining the meeting hall.

FIRST MEETING.

President: Walb, Bonn.

The president welcomed the society, commemorated the death of the members, Helmholtz, Lemcke, and Gottstein, who had died during the past year, and reported the admittance of eighteen new members.

1. Hartmann: *Dehiscences in the petrous bone, filled by fibrous membranes.*

Hartmann presented the following specimens: Specimen of a *normal petrous bone.* In the tegmen tympani, there exists a place the size of a lentil, consisting, instead of bone, of a firm, transparent membrane, which at the upper as well as at the lower surface, passes smoothly into the surrounding bone.

Furthermore, three specimens taken from patients who had died from the consequences of otitis media suppurativa chronica and cholesteatomatous formation respectively (sinus—thrombosis, cerebral abscess). In two cases the membranes were found in the roof of the mastoid antrum; in another case, upon the posterior surface of the petrous bone, partly occupying the sulcus sigmoideus. In the centre of this extensive membrane a piece of bone of about the size of a lentil was found to be firmly attached to the osseous surroundings, but connected with it only by the membrane. In no case was there an attachment of the osseous membranes to the dura mater, which passed smoothly into the adjoining bone.

The first specimen is explained as a rare occurrence of anomalous development.

The osseous membranes are produced by irritation of the bone through the inflammatory process, as a retrogressive transformation of the bony into connective tissue, which during operations may give rise to mistakes between them and the dura mater.

2. KRETSCHMANN, Magdeburg: *The purulent processes in the lower space of the tympanic cavity.*

KRETSCHMANN elaborately describes the anatomical relations of that portion of the tympanic cavity which overlaps inferiorly the sulcus tympanicus, and proposes for it the name of recessus hypotympanicus. The anatomical relations of the adjoining Eustachian tube, canalis caroticus, tuberosity of the facial, jugular vein, and also the thickness of the separating osseous layers are fully discussed. Among the pathological affections, Kretschmann confines himself to the purulent processes, which are mostly situated in the posterior apex. In these cases the patients frequently complain of a subjective sensation of tension in the mastoid portion. The treatment consists of irrigations with a canula of corresponding curve and cauterization with chromic and trichloracetic acids. In chiselling the mastoid, Kretschmann recommends chiselling the lower wall obliquely for better survey and treatment.

Discussion: WOLF recommends for granulations in this cavity, curettement with his spoon, and not with the snare. The latter, when used by him for the removal of a pulsating tumor of the recessus hypotympanicus, caused extreme hemorrhage and death from pyæmia.

Walb recommends, for the examination of the hypotympanic space, the use of double mirrors.

Hessler advises, with the reference to danger of injury to the facial, as emphasized by **Kretschmann**, asking the patient's permission before cutting through the facial.

Kretschmann has not found the double mirrors to be effective.

3. **Barth** : *The so-called lateralization in bone conduction.*

Lateralization in bone conduction is either subjective, according to its perception by the examined person, or objective, which may be controlled by two homogeneous otoscopes. The latter is due exclusively to changes in the conduction and resonance. In subjective hearing across the head, apart from the above-mentioned two cases, unilateral affection of the perceiving apparatus rarely causes objectively demonstrable alterations of conduction and resonance, probably assisted by the more favorable conditions of transmission of sound to an examined ear, of sound reflexes and the occlusion of a diseased ear against sound actions from without. Without influence upon unilaterally intensified hearing are: intensified pressure upon the inner ear, so-called hyperæsthesia of the acoustic. The phenomena in **Weber**'s experiment thus depend upon complicated relations, so as not to permit its blind application as a measure for diagnosis, although its critical use may frequently lead to quite useful results of examination.

4. **Dennert** : *Contribution to the study of tone hearing.*

Dennert considers for this purpose the use of the quantity of sound as the most adequate means. In order to receive an equal quantity he does not allow the tuning-fork to sound out uninterruptedly, but only for one second or once in a second to approach it to the patient's ear, until nothing is perceived in approximating such duration of time; in approximating more than one second, the tone hearing returns. For tuning-forks of different pitch the conditions differ.

Barth has observed two cases in which brief approach of the tuning-fork remained unperceived, whilst sounding out was noticed. For such experiments he has devised an apparatus, consisting of an upper disk with large openings, and a lower one with small opening, revolving against each other, to which a tuning-fork is attached. The latter records its vibrations upon the disk covered with fat.

5. **Lucae**: *Further communications on the experience gained from the resilient pressure probe.*

Forty-six cases in which all high tones were still well perceived, were selected and examined with **Rinné**'s experiment; and these were treated with the pressure probe only. It resulted in considerable improvement of twenty-eight cases with positive Rinné, and in the transformation of eight cases with negative Rinné into positive ones. Twelve cases with negative Rinné were inconsiderably, and six not at all, improved. In bilateral affections, the ear with positive Rinné was improved. All twenty-eight cases but one with positive Rinné still perceived musical tones very well, those with negative Rinné very poorly. In the one case with positive Rinné c⁴ was not perceived before, but again after treatment. A case with Ménière's symptons was also completely cured.

6. **Haug**: *Three cases of intramuscular abscesses after otitic pyæmia.*

In the discussion, **Brieger** believed these to constitute a different form from those described nowadays by **Fraenkel** as dermatomyositis septica in consequence of otitis media suppurativa.

Haug describes a case of hemorrhagic vesicles and maculæ after dentalgia without demonstrable cause, which were observed upon the membrana tympani and external auditory meatus.

7. **Kayser**. *Contribution to the pathology and treatment of objective ear noises which, according to their mode of development, are divided into tubal and real ear noises.*

The tubal noises are either muscular or elsewhere developed, as in autophonia, but transferred by changes in the tube. Against the latter form, **Kayser** has successfully applied indifferent fat, occluding the mouth of the tube. He considers the first form as allied to chorea and hysteria, caused by contractions of the tensor veli palati. He uses for treatment an irritation by pressing either the velum palati, mastoid process, or the teeth, but with varying success. If the snapping noise is produced by the separation of the tubal walls, a probe is introduced with immediate good result, which persisted in but three cases.

Zaufal prefers to distinguish the noise produced by the separation of the lateral from that of the medial tubal wall. In the latter cases he recommends massage by irritation of the velum palati with the finger downward or by pressing the tubal walls against each other.

A discussion on the possibility of hearing the noises produced by contraction of the tensor tympani then arose, in which BRIEGER, BARTH, ZAUFAL, NOLTENIUS, and BECKMANN participated, but which did not lead to concordant views.

SECOND MEETING.

WALB, of Bonn, was elected first president for the following year, and ZAUFAL, of Prague, second. The sum of 100 marks was granted to the HELMHOLTZ monument. The resolution on the publication of the transactions, of which every member receives one copy, is carried. The next meeting shall take place before Whitsuntide at Nuremberg. The annual fee of 10 marks for membership is retained.

8. KRETSCHMANN : *Partial restoration of the auricle.*

Lupus of the inner surface and a portion of the external surface of the auricle, treated locally and generally without success, made Kretschmann in such a case to destroy the entire area and to cover the defect by a plastic operation. The diseased skin was removed down to the cartilage and covered by a flap formed from the adjoining skin.

9. KRETSCHMANN, furthermore, demonstrates *steel tacks for the fixation of flaps.*

10. ANTON : *Contribution to the knowledge of Jacobson's organ in adults.*

After an historical introduction ANTON reports that not all examined persons had this organ, and he believes that this absence is congenital. This is concluded from the fact that the organ was not developed in one embryo, and only unilaterally in a new-born ; it was, however, found in spite of simultaneous atrophy of the mucous membrane. It always consisted of an open cleft, or trough-shaped sulcus, and a closed canal, the openings of which are frontally somewhat displaced towards each other. The canal consisted mostly of an extensive enlargement and some smaller excavations, which are unequally linked together ; it invariably took a somewhat ascending course. The epithelium was medially high, laterally low. The glands are acinous mucous glands varying in number ; they enter on the whole mostly the upper wall. Anton frequently found a basal membrane and a few calcareous concretions. The investigations did not result in the disclosure of the function of the organs.

11. Hessler: *The treatment of acute suppuration of the middle ear and mastoid process.*

Suppurations of the middle ear frequently or mostly persist as consequences of affections of the naso-pharyngeal cavity. The recovery from these affections accelerates the course of the acute suppuration. In order to prevent extension of the infection from the nose, Hessler warns against Politzer's method in acute suppuration. The removal of the pus is effected by the dry method, particularly in profuse secretions; extreme fluid cleansing produces furuncles. If in acute cases trephining of the mastoid process is indicated, typical chiselling only, according to Schwartze, is to be performed; irrigations through the mastoid cavity are to be avoided, and loose plugging takes their place; change of dressing every two or three days. The patients shall not be kept too long in bed, since long confinement retards the convalescence. In hydræmic conditions only convalescence should be patiently awaited.

In the discussion, Panse recommends dressing the ear after the preliminary paracentesis, and forbids the patients any manipulation of the ear. For developing maceration of the external meatus, he uses solutions of nitrate of silver.

Barth prefers irrigating to washing the wound, and washes also the surrounding parts.

Stacke operates for five years aseptically, dryly, and plugs the bottom of the cavity firmly, not loosely.

Brieger does not apprehend retention of pus from plugging of the auditory canal.

Hartmann believes that for years the majority of aurists have treated the initial stage of acute suppuration without irrigations and aërial douche. In chiselling, irrigations or washing are not required, but long-continued plugging may retard the healing process.

Noltenius does not believe that plugging interferes with the discharge.

Reinhard, Barth, Walb, and Hessler participate in the discussion.

12. Joël: *Leptomeningitis purulenta following otitis media purulenta acuta in a child, aged three.*

A boy, three years old, was seized after measles with otorrhœa of the right ear and empyema of the mastoid process, whilst the general condition was hardly disturbed. Typical chiselling and removal of great masses of granulations from the antrum. The bone towards the middle cerebral fossa and external semicircular canal was intact. During the first four days after the operation the condition was entirely normal, but on the fifth day intense vomiting and high fever ensued, which could not be explained by the immediate change of dressing; paracenesis of the thin cicatrized membrana tympani evacuated but a few drops of pus. During the continuation of high temperatures, headache, paralysis of the facial and abducens, constipation and delirium appear, so as to render the diagnosis of meningitis certain (background of the eye hardly changed). On account of hereditary tuberculous taint and the absence of extension of suppuration towards the cerebral cavity, a tubercular meningitis seemed quite probable. On the nineteenth day after chiselling, *exitus letalis.* The autopsy had to be confined to the head, without the removal even of the entire petrous bone. An extensive meningitis was found at the base, extending into the canal of the spinal cord, and, at some places, particularly along the large vessels, to the convexity, but without tubercles. The inner surface of the petrous bone did *not* present *any* carious places, and particularly at the sutura squamosa and the hiatus subarcuatus normal conditions existed. On the other hand, the *inner meatus* was filled with pus, in which the acoustic and facial were embedded. The tympanic cavity contained a small amount of pus; the ossicles were apparently normal.

The absence of another cause for the meningitis justified the belief of an extension of the suppuration through the labyrinth (probably after the destruction of a fenestral membrane).

A boy, æt. four, was observed almost simultaneously with the former case having slight purulent discharge from the right ear without demonstrable cause. After the disappearance of a circumscribed swelling of the external meatus, a small perforation could be demonstrated in the postero-inferior quadrant. Intercurrent influenza with temporary albuminuria (which appeared likewise in a younger sister of the child) led to high temperature and severe disturbance of the general condition. The pronounced picture of meningitis gradually developed with paralysis of the nerves of the facial and ocular muscles, delirium, and stiffness of the neck, and exitus took place under these phenomena. Since, apart from a slight sensitiveness to pressure the implication of the mastoid process could not be demonstrated, a tuberculous meningitis was considered as most probable, although extension to the meninges through the inner ear could not be entirely dismissed in consideration of the above-mentioned case.

The autopsy revealed extensive basal meningitis without tubercles, and without implication of the petrous bone (apart from slight otorrhœa). The case is to be explained as meningitis post influenzam.

Both cases teach the difficulty of diagnosing endocranial processes, which appear simultaneously with otorrhœa, particularly in childhood.

13. STACKE: *A method of otoplasty in extensive bone defects.*

Several flaps are formed in the following manner: A main flap without the periosteum, with the base upward, the apex downward, the latter corresponding with the apex of the mastoid process; then a periosteal flap inversely from the linea temporalis, both serving to cover the upper and lower wall, respectively, of the operative cavity; and finally the flap from the external meatus, used with the periosteal flap to cover the lower half of the wound. If the periosteal flap is too small, an occipital flap is circumcised, deprived of its periosteum, and replaced to its former position; this periosteal flap serves to enlarge the second flap. A disadvantage of the method is the persistence of the fistula, which may be osteoplastically covered after years.

Discussion: NOLTENIUS considers KOERNER's flap almost invariably as sufficient.

ZAUFAL prefers, unless the periosteal flap produces new bone, SIEBENMANN's method.

KRETSCHMANN would like to avoid the subsequent rarefaction of the flaps, and argues against the method on account of the formation of flaps from two sides.

HARTMANN is in favor of KOERNER's flap.

LEUTERT explains the necessity of persistent openings in cholesteatoma for the prevention of relapses.

NOLTENIUS leaves, in the formation of KOERNER's flap, a thick drainage tube for two weeks in the external meatus.

KOERNER emphasizes the necessity of forming different flaps in the osseous wound of different form; the first incision should permit any form of plastic.

HANSBERG and others participate in the discussion, which, in general, results in a disinclination against complicated formations of flaps.

THIRD MEETING.

President: ZAUFAL.

KOERNER and JANSEN give their report *on the methods of operation in the different otitic cerebral complications.*

14. KOERNER: *Historical introduction and general considerations.*

During the middle of the eighth decennium of this century the field was first opened by SCHEDE, who had cured a fistula of the petrous bone following a cerebral abscess. We owe to ZAUFAL the idea of opening the sinus, and of ligating the jugular vein. Careful selection of the diagnosed cases led to the first successes; the belief to find the abscess in the seat of the crossed paralyses, the motor centre, led to failures. KOERNER gave a synopsis of the results of autopsies, pointed to the seat close to the diseased ear, and proposed to enter the abscess from the petrous bone; he was followed by MACEWEN, who exposed the temporal lobe by removal of the tegmen tympani, but, in some cases, also from the squama, or from both places. BERGMANN opens the middle cerebral fossa from the tegmen tympani et antri, thus meeting the course of the suppuration in the centre, and follows it up in both directions. In this way extradural abscesses, etc., which could not be diagnosed, were found. The after-treatment is practised in different ways, mostly as loose plugging, not always by irrigations; sinuous abscesses should be examined with artificial illumination. In the autopsies of operated persons mostly multiple abscesses, in those of *non-operated* persons but one abscess is invariably found. Disintegrated tissue around the abscesses, and hemorrhagic foci are also found. These are the results of the last two years.

15. JANSEN: It is important in those cases, which present the symptoms of intracranial suppuration, but do not admit of an exact diagnosis, to know the frequency of the different affections.

From the case-books of the aural clinic in Berlin Jansen, during the last three and a half years, could record, among 184 still unpublished intracranial suppurations, 144 cases of extradural abscesses, 35 of thrombosis of the lateral sinus, and 5 cerebral abscesses.

Among the extradural abscesses, the suppuration in 161 cases was located in the posterior, and in 38 in the middle cerebral fossa, whilst in 14 both fossa were affected.

Hence it follows, that the extradural suppurations form by far the most frequent complication in suppurations of the middle ear, and particularly in the acute form.

The extradural suppurations prevail in the posterior cerebral fossa over those in the middle one by about the fivefold number ; in the chronic forms the proportion is almost 2:1. Of our five intracranial abscesses two were cerebellar and three cerebral.

These numbers give us important indications for the mode of the operative procedure. In cases with doubtful diagnosis, therefore, one opens at first the posterior cerebral fossa subsequently to chiselling of the mastoid process, and searches according to their successive frequency for perisinuous abscess, sinus thrombosis, and cerebral or cerebellar abscess.

After explaining the method of operation, Jansen believes that for epitympanic suppurations, the removal of the tegmen tympani from the mastoid process frequently suffices. In more extensive suppurations, he recommends the opening of the middle cerebral fossa according to VON BERGMANN'S suggestions, but following the chiselling of the mastoid process. In pachymeningitis, the dura mater should be incised, and in circumscribed arachnitis purulenta, dura and arachnoid together.

Jansen elaborately discusses a third form of extradural abscesses, which perforate from the vestibule through the semi-circular canals to the postero-superior surface, the prognosis of which is unfavorable on account of their deep situation. These deep abscesses mostly occur in connection with suppurations of the middle ear, and are comparatively rare. In order to expose these foci of pus, it is necessary to open the middle cerebral fossa from the squama, and to remove the upper as well as the posterior wall of the mastoid portion up to the labyrinthine nucleus. This even is not always quite sufficient. Since the labyrinthine suppuration of these cases is of a very destructive nature, and *greatly* endangers the arachnoid, Jansen recommends the opening of the vestibule in connection with the exposure of the extradural abscess, and describes the method.

On account of a case of deep-seated extradural abscess of labyrinthine origin, treated by him at the beginning with great success, Jansen tries to prove the correctness of his proposition.

Jansen recommends the same method of operation for those cerebellar abscesses in which the suppuration has extended from the vestibule and the canals respectively to the cerebrum, and furthermore also for those in which a vestibular suppuration can be positively diagnosed. After this radical opening of the middle and posterior cerebral fossæ, with the removal of the posterior and upper wall of the mastoid portion, of the canals, and the posterior portion of the vestibule, one gains a wide operative field for the opening of the cerebellar abscesses at the anterior surface of the cerebellum.

According to the same method, but without attacking the labyrinth, Jansen has lately twice opened the abscesses in the temporal lobe at the lower surface, by an incision of from 5 to 6 *cm* in length, with good result in one case, with temporary success in another. Among other advantages, this method enables one to find even deep-seated fistulæ, to operate on the sinus thrombosis from the same wound, and to place but a small portion of the dura outside of the skull after recovery, since the larger portion is directed toward the cavity in the petrous bone. In opening the posterior cerebral fossa in connection with chiselling of the mastoid process, the mostly affected section of the sigmoid sinus is seen first. If normal, one may remember that the portion at the jugular bulb or the bulb itself may be affected. The opening is most suitably made with chisel and bone forceps. The sinus is exposed up to the foramen jugulare as far as it appears septic, and posteriorly over the thrombosed portion, if necessary, to the torcular Herophili. As far as the septic condition reaches, incisions are made and the external wall removed. If the septic thrombus extends to the jugular vein, Jansen considers the ligation of the jugular as indicated without doubt, and also in those cases in which, after opening of the sinus, the pyæmia continues. In the cases in which the thrombosis is limited to the sinus, Jansen believes, in general, the opening of the sinus to be sufficient. The conditions are, after thrombosis of the bulb, not very favorable to its dislocation.

By simple discharge of the perisinuous abscess one succeeds in protecting the formed thrombus against disintegration. The success is above all determined by the severity of the infection, a fact which is not expressed in the statistical tables for ascertaining the value of the different methods of operation.

At the conclusion Jansen communicates the results attained at the aural clinic at Berlin.

These two reports are followed by an extensive discussion from which we emphasize the following points:

KRETSCHMANN argues against clearing the sinus with the spoon on account of the danger of accessory injury and prefers the spontaneous removal of the thrombus.

JANSEN believes it necessary to remove the danger of infection through the septic thrombus simultaneously with the operative interference.

JOËL emphasizes the necessity of searching for the abscess in acute suppurations from the squama as a more adequate means for the preservation of the function of the middle ear.

KÜMMEL apprehends in exploratory punctures, particularly in those situated close together, an injury to the cerebral substance by the entrance of infectious pus into the punctured canals.

JANSEN has found in the autopsies the canals of the exploratory punctures to look either clear or hemorrhagic, but never purulent or disintegrated.

Upon inquiry by BARTH, he confirms the occurrence of ineffective operations with cure of the cerebral symptoms.

KESSEL asks for the labyrinthine symptoms in opening the semicircular canals. These, Jansen replied, were rare, since the semicircular canals have in most cases previously lost their function through the suppuration; however, temporary vertigo was present or could be ascertained by the history.

16. WOLF: *Iron, lead, silver, and mercury in otology.*

WOLF discusses the advantages as well as the disadvantages of the internal use of these metals. Iron cures chlorosis and withal the dependent trophic disturbances of the hearing function, such as tinnitus, hardness of hearing, pulsating noises; the development of the latter is observed particularly in simultaneous hereditary tendency to aural affections. His views on the action of iron are concordant with those of VON NOORDEN, who believes that faulty development, not loss of hæmoglobins, was the cause of chloræmia, and the remedy, therefore, acts as a stimulus to development. Small doses, thus, are sufficient; as much as will lie on the point of a knife is given after the first course of the dinner; steel baths and steel water are less recommended.

To silver as nitrate in form of SCHWARTZE's cauterizations WOLF prefers the below-mentioned sublimate alcohol, which is used for staining the hair as well as lead. The latter is by far more dangerous, since sudden extreme deafness with severe neuralgia may appear, as Wolf had observed in a very grave case which entirely recovered. Mercury (cf. above) is considered by Wolf as an excellent remedy in chronic otorrhœa in form of solutions of *sublimate alcohol of one pro mille*. The external meatus is filled with the solution, and its penetration into the tympanic cavity facilitated by Politzer's method. Granulations are previously removed with the sharp spoon. In a case of considerable facial and acoustic disturbance in a young girl, Wolf could not produce any material improvement with sixty inunctions of unguentum cinereum ; injections of pilocarpine, aërial inflations, and potassium iodide, until the patient was sent to Wörrishofen (Pastor KNEIPP), but then improved only in the face. Wolf believes that cures by metals are essentially effected through the mediation of the sympathetic.

SZENES believes, that in the sublimate alcohol the healing agent is more the alcohol than the sublimate.

STIMMEL prefers hydrargyrum oxydatum cyanatum in solutions of five per cent., since it is less irritating to the external meatus, and he arrives at good results by alternating it with solutions of resorcin. In Ménière's disease, even its old forms, he successfully used the inunction cure, even after the useless application of potassium iodide.

REINHARD advocates the inunction cure in lues of the inner ear.

DENNERT recommends the treatment with tonics. He has seen a large number of chronic suppurations of the middle ear, which were about to be operated, but recovered without operative interference.

17. SZENES : *Conservative or radical treatment of acute mastoid affections.*

On the strength of a few cases SZENES advises to consider the operation only as a last resort.

FOURTH MEETING.

18. *Demonstration of specimens by* KATZ, *which excited general admiration.*

After the reading of a clinical communication by SZENES on *infection from the arm of a vaccinated infant upon the external auditory meatus of the wet-nurse* follows :

19. **Walb.** In connection with the excellent results of the investigations made by **Kessel** and **Hartmann**, which confirmed v. **Tröltsch**'s early views on the pathological condition of the secretions found in the middle ear of the new-born, particularly by bacteriological examination, **Walb** has directed has attention to a number of atrophic children. For cleansing the external meatus he used glycerin. In order to insure the efflux of secretions through the wide tube of infants, he used a modified form of **Politzer**'s method by inflating air through small balls with good results. Walb believes that, in all not well thriving childen, the mothers and midwives should make regular inflations of air or disinfecting irrigations of the nose and naso-pharynx.

Discussion : **Panse** militates against the recurrence of gonococci in the middle ear of new-born as published by **Haug** (now absent), which is in strong contradiction with the results of other investigators, and he is upheld by **Brieger** and **Hartmann.**

Hartmann recommends first to wipe the external meatus dry and remove a thin membrane with the probe and forceps. If unsuccessful, the application of peroxide of hydrogen proves to be well adapted.

Beckmann will always first operate on the pharyngeal tonsil.

Zaufal reminds of the possible production of ulcerations in the oral cavity by excessive cleanliness ; the best method of cleaning is the act of suction, by which the secretions are simultaneously removed from the naso-pharynx and tube. It is not advisable, to trust Politzer's balloon to the midwife, as little as to leave such doubtful procedures to the public, which frequently become rather disastrous.

Then follow *demonstrations.*

20. **Lucae** : *A new instrument for pulling the handle of the malleus outward in extreme retraction and adhesion of the membrana tympani respectively.*

A long thin cylinder, in which a small hook is advanced by spring and screw action. The force of the action is thereby regularly, not manually, exerted.

21. **Hansberg** demonstrates, in brains hardened in Müller's fluid and alcohol, the *relations of brain abscesses to the inner capsule*, etc.

22. **Reinhard** presents a *cap*, which leaves enough space *for mastoid* operation, but covers the remaining head to insure asepsis ;

furthermore, small *wedges for the fixation of the head* in order to spare one hand of an assistant. Demonstration of *pathologico-anatomical specimens* by Reinhard.

23. PANSE demonstrates *sterilized* small inexpensive *cloths* with holes for ear funnel and auricles, which may be thrown away after use.

24. BRIEGER demonstrates the photographic illustration of a cutaneous carcinoma of fifteen years' duration, which had implicated the ear. Carcinomatous cells could not be found on account of the long duration of the process.

25. BECKMANN demonstrates his instrument for removal of the pharyngeal tonsil.

It resembles that of GOTTSTEIN, but forms a quadrangle without the curve of the handle, is made stronger (WINDLER, Berlin), curved over the surface with frontal elevation and convexity directed upward. In introducing it, the head should be pressed forward, the instrument removing the swelling by one cut. Children of less than six months of age have been thus operated by BECKMANN. The aërial douche, therefore, is almost entirely abandoned in children, since the operation had the sufficient effect in 95 per cent. of all cases.

Discussion: NOLTENIUS operates upon the pharyngeal tonsil in chloroform narcosis.

HOFFMANN militates against it, JOËL advocates it.

WALB prefers instruments of changeable form, corresponding to the changeable form of the pharyngeal tonsil.

STACKE prefers narcosis on account of the fears of patients; his instruments are those of GOTTSTEIN and MORITZ SCHMIDT.

BRIEGER states the occurrence of relapses, argues against the belief that tuberculosis is the cause of the pharygeal tonsil and operates with TRAUTMANN's spoon and the finger.

ZAUFAL considers the scraping of adenoid vegetations with the finger nail as sufficient on account of their softness.

HARTMANN recommends, in sufficiently wide noses, particularly in older children, the use of the cold snare through the nose.

WALB recommends the instrument of SCHÜTZ.

KAYSER has also observed relapses.

SELIGMANN believes that in narcosis a danger of aspiration pneumoniæ is threatened.

26. LEUTERT: *Two specimens, illustrating the development of cholesteatoma.*

27. KAYSER. *Demonstration of an apparatus for the exact determination of the permeability for air through the nose (rhinometer.)*

This somewhat complicated but ingenious apparatus consists of a pair of bellows, which suck in a definite amount of air with invariably equal force. These bellows, through an automatic device, open and close, at their own opening, the lower effluent end of a graduated glass tube, filled with water, so as to permit the efflux of water, only during the time of suction by the bellows. The more slowly, therefore, the air streams into the bellows, the more water can leave, and inversely. If the amount of the effluent water in simple suction through an open tube is known, and this tube is hermetically closed into the mouth with the diaphragm resting (expiratory position), the comparison of the then evacuating amount of water with the known quantity shows the degree of the impediment of the permeating air through the nose in every case, since the bellows can only in this way suck in the air, viz., it must draw it through nose and mouth. A table admits of ready and rapid figuring.

28. ZAUFAL closes the meeting, after the demonstration of his instrument for chiselling the cavity of the petrous bone.

List of Members Present.

1. ANTON, Prague.
2. BARTH, Marburg.
3. BECKMANN, Berlin.
4. BEHRENDT, Berlin.
5. BIEDERMANN, Jena.
6. BINSWANGER, Jena.
7. BRANDT, Strassburg i-E.
8. BRANCKMANN, Jena.
9. BREITMEG, Coburg.
10. BRIEGER, Breslau.
11. BROCKHOFF, Bonn.
12. BÜRKNER, Goettingen.
13. DENNERT, Berlin.
14. FRICKE, Stettin.
15. FRIEDRICH, Leipzic.
16. HAECKEL, Jena.
17. HANSBERG, Dortmund.
18. HARTMANN, Berlin.
19. HAUG, Munic.
20. HECKE, Breslau.
21. HEINE, Berlin.
22. HESSLER, Halle.
23. HOFFMANN, Dresden.
24. HUBNER, Stettin.
25. JANSEN, Berlin.
26. JENS, Hannover.
27. JOËL, Gotha.
28. JOSEPH, Stettin.
29. KARUTZ, Lübeck.
30. KATZ, Berlin.
31. KAYSER, Breslau.
32. KESSEL, Jena.
33. KOCH, Jena.
34. KOERNER, Rostock.
35. KREHE, Jena.
36. KRETSCHMANN, Magdeburg.
37. KÜMMEL, Breslau.
38. LEUTERT, Halle.
39. LUCAE, Berlin.
40. MEIER, Magdeburg.
41. MOLDENHAUER, Leipzic.
42. MÜLLER, Altenburg.
43. NOLTENIUS, Bremen.
44. OBERMÜLLER, Jena.

45. Panse, Dresden.
46. Pfeiffer, Leipzic.
47. Reinhard, Duisburg.
48. Riedel, Jena.
49. Richter, Prague,
50. Rohden, Halberstadt.
51. Roller, Trier,
52. Schubert, Nuremberg.
53. Seligmann, Frankfort o-M.
54. Skutsch, Jena.
55. Sonnenkalb, Chemnitz,
56. Stacke, Erfurt.
57. Stern, Metz.
58. Stimmel, Leipzic.
59. Stintzing, Jena.
60. Szenes, Budapest.
61. Thies, Leipzic.
62. Ullrichs, Halle.
63. Walb, Bonn.
64. von Wild, Frankfort-o-M.
65. Wolf, O., Frankfort-o-M.
66. Zaufal, Prague.
67. Ziehen, Jena.

REPORT ON THE PROGRESS OF OTOLOGY DURING THE FIRST AND SECOND QUARTERS OF THE YEAR 1895.

I.—ANATOMY, HISTOLOGY, AND PHYSIOLOGY OF THE EAR AND NASO-PHARYNX.

By Prof. AD. BARTH, Marburg.

Translated by Dr. A. Duane, New York.

A.—ANATOMY.

a.—ORGAN OF HEARING.

1. Siebenmann, F. The first beginnings of the middle ear and ossicles of the human embryo of the fourth to the sixth week. With two plates. *Arch. f. Anatomie*, 1894, parts v., vi.

2. Lake, R. Abnormal course of chorda tympani through middle ear. Two figures. *Lancet*, Jan. 5, 1895.

3. Retzius. The development of the auditory nerve. *Hygiea*, lv. (supplementary volume).

4. Weidenbaum. Upon the nerve-centres in the organ of hearing of birds, reptiles, and amphibia. Two plates. Inaugural Dissertation, Dorpat, 1894.

1. Siebenmann made serial sections from well-preserved human embryos of the first six weeks. His results are thus summed up. The first trace of the stapes is a shapeless mass of blastema, present as early as the fourth week. In the sixth week it is found in conjunction with the malleus and incus under the form of a ring of temporary cartilage ; it consists of but a single piece, and is not of twofold origin. By the middle of the sixth week all the ossicles have acquired approximately their permanent

form, and constitute a chain, the first and last portions of which are the cartilages of the first and second branchial arches. From the latter, however, and from the labyrinth, the ossicles can readily be distinguished by differences in staining properties, and hence are to be regarded as distinct segments of the primordial cranium. Of the various cavities forming the middle ear the tympanum is the only one present in the beginning, and this extends to a point directly beneath the lateral surface of the face. In the sixth week the auricle develops on the anterior aspect of the first branchial fissure and encircles the drum-membrane, which is thus demarcated. At this time the handle of the malleus already extends as far as the middle of the membrane. From the sixth week on, the development of the auditory canal and the Eustachian tube takes place by an increase in thickness of the lateral wall of the face, as a result of which the tympanic cavity recedes both from the surface of the face and from the pharynx.

SIEBENMANN.

2. LAKE found the chorda tympani, after making its exit at the usual level, running horizontally forwards to about the junction of the lowest fourth of the handle of the malleus with the remainder of the bone, so that it was clearly visible through the drum-membrane. After reaching the malleus it ran upwards, passing off from the tympanum by the canal of Huguier, and keeping below the tendon of the tensor tympani. LAKE.

b.—NASO-PHARYNX.

5. OWEN, A. The anatomy of the nasal cavity. London.

6. SMITH, E. The connection between the olfactory bulb and the hippocampus. *Anat. Anz.*, p. 470, 1895.

7 BAUR, G. The palatal region in the Ichthyosauria. *Anat. Anz.*, p. 456, 1895.

8. HOPMANN. Casts of the upper pharynx and the choanæ. *Rev. intern. de rhinol.*, etc., Feb. 25, 1895.

9. RAUGÉ, P. The incisive canal and the organ of Jacobson. *Arch. int. de laryngol.*, etc., July–Aug., 1894.

10. WRIGHT, JONATHAN. A consideration of the vascular mechanism of the nasal mucous membrane and its relation to certain pathological processes. *Amer. Journ. of the Med. Sc.*, May, 1895.

8. Hopmann describes a method of obtaining casts of the pharynx and the choanæ in the living, the idea being to study in the most suitable way the variations that may be present in the parts.

9. Raugé's paper is an exhaustive critical review of all the French and foreign articles upon the subject of Jacobson's organ. After a careful study of the organ in the sheep in which it is particularly well developed, Raugé considers it as it exists in man, examines the numerous hypotheses that have been framed regarding it, and refutes the theories as to its physiological character, saying that it is an organ undergoing retrogressive changes and having no physiological significance whatever.

10. After a brief description of the vascular anatomy of the turbinated bodies, as it has been laid down by Zuckerkandl, Wright, nevertheless, is not convinced, that the primary arterioles do not occasionally empty directly into the venous sinuses. His observations taken from microscopical sections, principally of the sheep, show that the venous return is checked, first, by the dilatation of the artery, which presses the vein against the wall of the bony canal, through which they both pass; second, by the contraction of circular muscle fibres around the arterioles and veins which would prevent over-engorgement of the vein, while the dilatation of the artery would compress the vein; third, by engorgement of the superficial tissues acting to produce compression of the veins between the parallel fibres of the periosteal layer and the elastic fibres and glands external to it. Thickening of the walls of the venous sinuses interferes with contraction of the muscle fibres. In atrophy the muscular element and, consequently, the vascular spaces to some extent become eliminated. The capillaries of the surface and the glands are in such close proximity as to easily explain transudations of serum to the surface directly from the vessels. Three illustrations clearly show the arrangement of the vessels in the bony canals, of the muscular fibres, and of the veins between parallel layers of periosteum.

Toeplitz.

B.—PHYSIOLOGY.

EAR.

11. Matte. Upon the static functions of the ear, with experimental demonstrations upon animals. *Münich med. Wochenschr.*, Dec. 4, 1894.

12. **Bruck, A.** Upon the relations of deaf-mutism to the so-called static sense. *Arch. f. d. ges. Physiol.*, vol. lix., p. 16.

13. **Stern, L. W.** The speech of deaf-mutes and the functions of the labyrinth. *Ib.*, vol. lx., p. 124.

14. **Fano and Marini.** Upon the effects of lesions inflicted upon the organ of hearing. *Sperimentale*, parts 5 and 6, 1893.

15. **Asher, L.** Upon the pressure in the labyrinth, particularly in cases of brain-tumor. *Zeitschr. f. klin. Med.*, vol. xxvii., parts 5 and 6.

12. **Bruck** examined eighty-two deaf-mutes with reference to their ability to walk in a straight line, to hop on one foot, to stand with the legs close together or upon one leg, and to balance on a trapeze. Forty-three showed an abnormal locomotor condition. Bruck concludes that the auditory organ, or at least the maintenance of its normal function, is of significance for the statics of the body. Nevertheless various facts elicited in these experiments go to prove that the inner ear, and particularly the semicircular canals cannot be regarded as organs of equilibrium.

13. **Stern** examined the distinctness and fluency of speech in a series of deaf-mutes and compared the results with the equilibrium experiments of Kreidl and Pollak. He found that in every set of cases examined those who showed normal equilibrium were also much more apt to have normal speech. Thus of those who were absolutely normal as regards equilibrium, the proportion that could talk fluently and distinctly was one half, while of those who showed any abnormity of equilibrium the proportion was only one fourth.

14. **Fano** and **Marini** from experiments upon animals argue against the view that the semicircular canals are an organ of equilibration. They found no difference between the phenomena produced by the destruction of one canal and that of another, nor between those produced by the destruction of the ramus vestibularis and the ramus cochlearis. An animal in which the entire inner ear is destroyed is better off as regards equilibration than one in whom there is only a partial injury. Impulses are constantly going from the ear to the central nervous system. These impulses, which under normal conditions are of more or less service in co-ordinating the movements of the body, produce when there is a lesion of the ear a disarrangement of the nerve centres. There is no reason for supposing that there are any but auditory fibres in the auditory nerve, and the function of the

semicircular canals, too, like that of the cochlea, is exclusively auditory.

15. **Asher** discusses theoretically the arrangements for regulating the pressure in the labyrinth and endeavors to account for the marked difference (95:11) shown by the eye and the ear in developing symptoms of engorgement in the case of cerebral tumor. He then describes a case that he observed in which the masses of tumor had grown into the meatus internus and in spots as far as the lamina spiralis. The cells of the ganglion spirale were completely replaced by the new growth. The membrana basilaris, Reissner's membrane, and the stria vascularis were normal. The blood-vessels were dilated and looked as if injected with blood corpuscles. [This may occur when the temporal bone is perfectly normal, and hence cannot be regarded in every case as an evidence of engorgement.—Reviewer.] The organ of Corti was absent, although the cells in the neighborhood were intact. The left auditory nerve was atrophic and the tensor tympani had undergone fatty degeneration. Reissner's membrane was not depressed as it was in Steinbrügge's case. It must be assumed that, owing to the protective mechanism found in the labyrinth, increased intracranial pressure may fail to produce any injury to the hearing or any anatomical changes, and hence tests of the auditory function are of no special service in facilitating the recognition of morbid processes in the cranial cavity. The ganglion spirale is probably to be regarded as a trophic centre for the organ of Corti.

II.—PATHOLOGY AND THERAPEUTICS.

By Dr. ARTHUR HARTMANN, Berlin.

Translated by Dr. A. Duane, New York.

MISCELLANEOUS.

16. **Grünberg, B.** Contributions to the question of the etiology of aural vertigo. Dissertation, Bern, 1894.

17. **Steuer, Alfred.** Two cases of objective noises in the ear. *Wien. klin. Wochenschr.*, No. 51, 1894.

18. **Jennings, J. E.** Earache, its causes and treatment. *Med. Review*, March 16, 1895.

19. PHILLIPS, W. C. The care of the ears during the exanthemata. *N. Y. Med. Jour.*, Feb. 16, 1895.

20. HESSLER. Erysipelas in aural affections. *Münch. med. Wochenschr.*, No. 3, 1895.

21. SZENES, S. Upon the affections of the ear occurring as the result of treatment applied for diseases of the naso-pharynx. *Allge. Wien. med. Zeitung*, Nos. 38 and 39, 1894.

22. ALDERTON, H. A. The influence of affections of the upper air-tract upon the ear. *Annals of Ophth., Otol., and Rhinol.*, Jan., 1895.

23. LERMOYEZ, M. Rhinology, otology, and laryngology, as taught and practised by the medical faculty in Vienna. Paris.

24. RICHARDS, GEO. L. Halle and the aural clinic of Prof. Schwartze. *Boston Med. and Surg. Jour.*, March 21, 1895.

25. BACON, DENCH, ADAMS, etc. Seventy-fourth Annual Report of the New York Eye and Ear Infirmary, for the year ending Sept. 30, 1894. Ear and Throat Departments.

26. KNAPP, TOEPLITZ, VULPIUS. Twenty-fifth Annual Report of the New York Ophthalmic and Aural Institute, for the year ending Sept. 30, 1894. Ear and Throat Department.

27. POMEROY, O. D., etc. Twenty-fifth Annual Report of the Manhattan Eye and Ear Hospital, for the year ending Sept. 30, 1894. Ear and Throat Departments.

28. GLEASON, E. B. Common diseases of the ear. Specimens illustrating their pathology. *Atlantic Med. Weekly*, March 23, 1895.

29. DENCH, E. B. Oral synergy. *N. Y. Eye and Ear Infirmary Reports*, Jan., 1895.

30. BACON, G. Cause and prevention of deafness. *American Medico-Surg. Bull.*, May 1, 1895.

31. CHEATLE, ARTHUR H. Bathing and aural diseases. *Lancet*, June 15, 1895.

32. GILLESPIE, L. Two cases of deaf-mutism and goitre. A case of deaf-mutism with persistent anterior fontanelle. *Provincial Med. Jour.*, May 1, 1895.

33. LERMOYEZ and HELME. Upon asepsis in otology, rhinology, and laryngology. *Annales des mal. de l'oreille, etc.*, No. 6, 1895.

34. ALT, FERD. Upon the disappearance of hearing in one ear. *Monatsschr. f. Ohrenheilk.*, No. 4, 1895.

35. GELLÉ. Torticollis ab aure læsa. *Annales des mal. de l'oreille, etc.* No. 4, 1895.

36. GELLÉ. Upon phlegmonous subcutaneous periodic œdemas. *Ib.*, No. 5, 1895.

37. RANDALL, B. A. The prime effect upon the ear of nasal stenosis. *Phil. Polyclinic*, May 4, 1895.

38. ROBERTS, N. S. A few otological and rhinological Don'ts, or what not to do in ear and nose conditions. *Med. Record*, June 1, 1895.

39. BEADLES, C. Two cases of malignant disease, involving the hypophysis cerebri. *Br. Med. Jour.*, Dec. 22, 1894.

40. TARGETT, J. H. Tumor of pituitary fossa. *Ib.*, Dec. 22, 1894.

16. GRÜNBERG repeated Lichtheim's experiments of injecting the conidia of the Aspergillus fumigatus into the semicircular canals in rabbits, but found that, as far as the production of vertigo was concerned, the results were uncertain and largely negative. He then tried the effects of a capillary stream of ethyl chloride upon the drum-membrane and auditory canal. This, by its instantaneous evaporation produced extreme cold but no mechanical irritation. In two cases out of nine tested in man, there was no vertigo ; the rest, especially those with defects in the drum-membranes, reacted in characteristic fashion. He further tried the effects of electricity upon 26 aural patients in Valentin's clinic. In agreement with Gärtner, Pollak, and Gradenigo he found that in almost all unilateral aural affections the diseased ear was more sensitive to electric stimulation than was the sound ear. SIEBENMANN.

17. STEUER describes two cases, in the first of which a crackling sound, recurring rhythmically 100 to 150 times a minute, was audible objectively at a distance of half a metre from the left ear, which was affected with catarrhal otitis media. The sound could be arrested by any of the manœuvres for lifting the velum palati. In the second case, in which the ears appeared normal, objectively audible sounds occurred, emanating from either side alternately, and capable of being arrested for a while by pressure made upon the vagus. Steuer refers these sounds to clonic spasm of the tubal muscles—*i. e.*, both the levator and the tensor palati. Treatment was without avail. [*Cf.* No. 72.] POLLAK.

18. JENNINGS describes the different remedies used in ancient times, and urges upon the general practitioner the necessity and

importance of diagnosing and caring for every patient suffering from earache. He refers to diffuse inflammation of the meatus as well as furunculosis, foreign bodies, otitis media acuta, and cases of pain of a reflex nature, with the appropriate treatment for these conditions. BACON.

19. According to PHILLIPS, the dorsal decubitus usually assumed by patients suffering from the exanthemata favors the accumulation of the morbid secretions, and the latter must be removed as thoroughly as possible. The child's nose should be frequently blown to help dislodge the secretions, and applications should be made of boric acid, glycerin, peroxide of hydrogen, etc. The great object should be to prevent the extension of the inflammation to the structures of the middle ear. BACON.

20. HESSLER gives the histories of seven cases of erysipelas with affections of the ear, which he has observed in a single semester. He adds at length the reasons for believing that a transmission from one case to another is to be excluded, so that each must be held to have developed spontaneously. In all cases the erysipelas started in the ear, passed from this over the face and head, and terminated in the auricle of the other side. The duration varied from five to thirteen days. The attempt to abort the disease by painting the skin with iodine was unsuccesful in every case, although it had been done formerly with good result in other cases, some of which have been described. None died. Hessler concludes that erysipelas does not contra-indicate operative interference ; on the contrary, in doubtful cases it supplies one indication the more. Bacteriology gives a sufficient explanation for the frequency with which erysipelas and otorrhœa are associated. From the demonstrated identity of Fehleisen's micrococcus with the ordinary pyogenic micro-organisms it would follow in practice that erysipelas is no more contagious than is acute purulent otitis media, that the isolation of an erysipelas patient is not indicated, and that the disinfection of the instruments should be as carefully performed in the treatment of otorrhœa of any sort as has hitherto been done in the case of erysipelas. An individual predisposition must be called in to account for the cases in which the disease attacks several persons in succession. If a number of persons thus predisposed happen to come under the treatment of one man, an epidemic of erysipelas is produced like that which the author encountered. MÜLLER (Stuttgart).

21. SZENES has seen otitis produced artificially by the use of

gargles and nasal douches, by the application of solutions of silver nitrate to the nasal mucous membrane, and by operations upon the nose. POLLAK.

22. ALDERTON finds that in external-ear troubles, especially cerumen, the condition of the naso-pharynx has a slight influence; in middle-ear affections the condition of the naso-pharynx exerts a great influence upon the aural processes (being directly causative in from 35 % to 88 % and partly in from 10 % to 29 %). In otitis media and interna, the naso-pharynx was partly to blame in 36 %; in otitis interna only 14 % could possibly have exerted any influence. BACON.

24. RICHARDS gives an interesting account of the clinics held at Halle, and particularly that of Prof. Schwartze, devoting most of the paper to a description of his method of operating and treatment in general of aural cases. BACON.

25. In the Ear Department of the New York Eye and Ear Infirmary 4688 new patients were treated, and 495 operations were performed, viz.: 133 paracenteses, 6 ossiculectomies for catarrhal otitis, 19 ossiculectomies for purulent otitis, 48 mastoid operations with 41 chisellings, 74 operations for adenoids, and 28 tonsillotomies. In the Throat Department 401 operations were made among 1884 new cases, including 103 removals of adenoids, 69 tonsillotomies, 4 Asch's operations for straightening the septum, and 3 curetting of the ethmoid and Highmore's sinuses TOEPLITZ.

26. In the Department for the Ear, Nose, and Throat of the Ophthalmic and Aural Institute 2028 new patients were treated and 234 operations were performed. The more important operations were 14 openings of mastoid with chisel (among which were 2 Stacke operations, 1 modified Stacke, 1 case complicated with cerebral abscess, and 1 with cholesteatoma), 19 paracenteses (1 with tenotomy of tensor tympani), 50 removals of adenoids, 1 removal of epithelioma of palate, 24 tonsillotomies, 1 ossiculectomy, 1 separation of incudo-stapedial joint, and 1 trephining for cerebral abscess. TOEPLITZ.

27. The number of new patients treated in the Ear Department of the Manhattan Eye and Ear Hospital was 2749, in the Throat Department 3809. 236 operations were performed in the former, including 39 mastoid operations, 21 paracenteses, and 59 removals of adenoids. The total number of operations upon the nose and throat was 688, including 180 for adenoids and 16 for deflected septum and nasal deformities. TOEPLITZ.

28. GLEASON says that clinically ear diseases may be roughly divided into affections of the external ear 23 per cent., of which more than one fourth are cases of impacted cerumen; catarrh of the middle ear 45 per cent., of which less than one fourth are acute; suppuration of the middle ear 35 per cent., of which one fifth are acute; whilst affections of the internal ear constitute about 2 per cent. of aural affections. BACON.

29. DENCH refers to the observations on this subject made by Wharton Jones, Urbantschitsch, Weber-Liel, Cholewa, and others, and says "that the perceptive portion of the auditory apparatus of the ear last involved is the part attacked in a majority of cases when both ears are affected, has been suggested by the author (in a previous report)." Of twenty-six cases in which the histories were complete, it was found that sixteen presented distinct evidence of a secondary cochlear involvement in the ear last affected. He suggests that the effect of one ear upon the other depends upon the decussation of the fibres of the auditory nerve in the medulla. He says that "it seems quite probable that the pathological changes which take place in the middle ear of one side interfere with the trophic nerves of the corresponding opposite areas, and that in this way the opposite organ is secondarily involved. This view is substantiated by the occasional occurrence of symmetrical lesions, acute in character, and of such progress as to preclude the possibility of a separate involvement from a common cause." The author submits the preceding views as the result of clinical observation only, but does not wish to convey the impression that the extent of this relation between the organs of hearing is definitely known, nor that the exact manner in which this action is brought about is a matter of certainty. BACON.

30. BACON gave the statistics of 203 children, 115 males and 88 females. Of the causes of deafness: there were 10 cases of cerumen, 4 of foreign bodies, 30 of acute catarrhal otitis media, 3 of subacute catarrhal otitis media, 25 of chronic catarrhal otitis media, 37 of acute purulent otitis media, 85 of chronic purulent otitis media, 2 of chronic purulent otitis media and mastoid disease, 1 of furuncle, 1 of acute diffuse otitis externa and mastoid disease, and 5 of disease of the labyrinth. Of the 203 cases, 177 were cases of acute and chronic catarrhal and acute and chronic purulent otitic media. Many of such patients are poorly nourished, tuberculous, scrofulous, or syphilitic, so that cod-liver oil, syrup of iodide of iron, and syrup of the hypophosphites are indicated.

Examination of the ear is most important in scarlet fever, measles, diphtheria, and influenza. An early paracentesis is important in these cases, otherwise there may be great destruction of the drumhead, followed by caries of the ossicles and temporal bone. Of the 203 cases, besides cerumen, other causes were colds, influenza, adenoid growths, swimming, measles, diphtheria, teething, tuberculosis, falls, and cerebro-spinal meningitis. BACON.

31. CHEATLE draws attention to the fact that bathing, especially sea-bathing, is often the direct cause of ear troubles, mentioning acute otitis media, diffuse external otitis, lighting up of an acute condition in chronic middle-ear suppuration, occasional extension of a suppurative process into the antrum, mastoid process, etc. exostoses, rupture of membrana tympani, concussion of the labyrinth, and swelling of a ceruminous plug. He thinks the acute otitis is sometimes caused by water being blown into the middle ear from the naso-pharynx, and holds that a patient with a middle-ear discharge should never bathe, and those with a tendency to any ear trouble should never bathe without adequate means for plugging the meatus. CHEATLE.

32. At the Edinburgh Medico-Chirurgical Society GILLESPIE showed two sisters, deaf-mutes, both suffering with goitre and rapid pulse; two other sisters, not shown, were in exactly the same condition; the only other child in the family was a boy, who was perfectly healthy. Improvement in general condition occurred under iodide and bromide of strontium. He also showed a female deaf-mute aged nine years with persistent anterior fontanelle and partially separated halves of frontal bone. CHEATLE.

33. LERMOYEZ and HELME, after some introductory remarks upon the bactericidal action of nasal mucus, and upon the possibility of an infection originating at the site of operation, earnestly recommend aseptic as opposed to antiseptic procedures, the latter being dangerous on account of the great capacity for absorption that the mucous membrane exhibits. It is neither possible nor necessary for the physicians to undergo disinfection as for a laparotomy; but he should proceed as the bacteriologists do who, without being themselves aseptic, yet work under perfectly aseptic conditions. Sometimes though, when direct manual manipulation is required, the hands should be carefully disinfected. As regards the disinfection of the patient, the auditory canal may be made aseptic (by Zaufal's method), but the nose and larynx cannot be. Irrigations into the latter are, in fact, pernicious, since they remove

the nasal mucus with its bactericidal properties. It is, however, absolutely necessary and quite possible to sterilize the instruments, and for this purpose the authors recommend hot air and steam rather than boiling water. For very delicate instruments a prolonged immersion in chloroform may suffice. The greatest difficulty in producing perfect sterilization occurs, as is well known, in the case of non-metallic instruments. Here the best thing to use is a Christmas' solution (carbolic acid 9 parts, lactic acid 2, salicylic acid 1, and menthol 0.1), which in double concentration disinfects tuberculous sputum in a few minutes, and yet does not injure mirrors even when they have been immersed in it for forty-eight hours. The authors also describe a syringe of their device, made of asbestos, and which can be subjected to boiling; and some other very practical forms of apparatus. For the sterilization of water they have had constructed a vessel of a capacity of forty litres, by means of which any desired quantity of water can be heated at any time and obtained free from germs. Cotton they make into small pear-shaped tampons and sterilize in a current of steam or upon a sand-bath, keeping them in tightly closed vessels from which they are removed with sterilized forceps. For use the tampons are rolled with the fingers (which must be made more or less aseptic), are moistened in an alcoholic solution of boric acid, and are heated in a flame until they just begin to char. In the concluding section the authors illustrate the necessity and usefulness of these minute aseptic precautions by detailing the history of 257 operations performed upon out-patients. The results are brilliant. [*Cf.* No. 73.]

G. ZIMMERMANN (Dresden).

34. ALT believes that in deafness which is completely or mainly unilateral, the psychic perceptivity for sonorous impressions may be lost altogether from disuse, and recommends that patients of this sort should carry on regular auditory exercises with the worse ear, the better one being occluded. KILLIAN.

35. GELLÉ says that the ear should be examined in every case of contracture of the sterno-cleido-mastoid or other muscles of the neck. Acute inflammations of the middle ear, which pass over into the mastoid cells (especially into those below and to the inner side), or produce glandular swelling, or result in cerebral complications, may be the cause of wry-neck; and the author states that he has observed the latter in sclerosis and in subacute forms of Ménière's vertigo. ZIMMERMANN.

36. Gellé, in 1890 (Berlin Congress) called attention to the occurrence of acute painful œdema of the face as a precursor of facial paralysis; he now describes analogous cases in which a circumauricular œdema constitutes the prominent symptom. This is always unilateral; diffuse and extending over the entire side, often indeed as far as the hyoid bone; hot and painful; and affecting particularly the lumen of the auditory canal. It likewise extends into the deeper parts, as proved by the development of vertigo and tinnitus. Swelling of the pharyngeal mucous membrane is a frequent concomitant. The œdemamay disappear in from eight to twelve days without leaving a trace behind, or may leave in some cases impairment of hearing, in others facial paralysis. In its etiology the affection may be either of nervous, constitutional (gouty), or infectious origin. It is not easy to differentiate the affection from inflammations of the Falloppian canal, inflammations of the external and middle ear, eczema, erysipelas, and mastoid disease. The occurrence of resolution on about the twelfth day is, however, pathognomonic of this form of primary œdema. Gellé has observed 11 cases, upon which he bases his description of this new form of disease.

37. Randall considers that this obstructive condition is almost invariably anterior, perhaps not extending anywhere near the tube mouths, and may be vasomotor rather than inflammatory. Hence, with the nose closed anteriorly, every swallowing effort made sucks the air from the tympanum and speedily renews a partial vacuum. The employment of cocaine can easily prove a snare. After gentle alkaline spraying and cleansing, an oil spray generally medicated with menthol camphor is used, and the surfaces lightly dusted with calomel. Bacon.

39. The first case reported by Beadles to the Pathological Society of London, was a patient who died in Colney Hatch Asylum; before death, discharge from left ear and swelling of left side of face. *Post-mortem:* Base of skull widely destroyed by a squamous-celled carcinoma, which had probably arisen from the left tympanic cavity. The second was a glandular carcinoma, which had probably arisen in the glandular epithelium of nasopharynx. Cheatle.

40. Specimen shown by Targett at Pathological Society, London, tumor about two inches in diameter, having histologically the structure of endothelioma containing nest-like bodies. Before death discharge of pus from left nostril. *Post-mortem:* Suppurative meningitis, growth having perforated floor of fossa.

INSTRUMENTS AND METHODS OF EXAMINATION AND TREATMENT.

41. PARK, J WALTER. A new and more convenient instrument than the Politzer air-bag for inflating the middle ear. *Annals of Ophth., Otol., and Rhinol.*, Jan., 1895.

42. RANDALL, B. A. The employment of the Eustachian catheter. *Phil. Polyclinic*, Jan. 12, 1895.

43. BERGEAT, H. Head-band of hard rubber for carrying a forehead mirror, etc. *Arch. f. Laryngol.*, vol. i., part 3.

44. BISHOP, S. S. A mastoid guide and separator. *Journ. Amer. Med. Assoc.*, Feb. 9, 1895.

45. PALMER, A. W. A frontal sinus drill. *N. Y. Med. Journ.*, March 2, 1895.

46. GOLDSTEIN, S. A modified bivalve nasal speculum, and a modified Bosworth nasal speculum. *Med. Record*, Feb. 9, 1895.

47. SPEAR, EDMUND D. A new nasal speculum. *N. Y. Med. Journ.*, Jan. 26, 1895.

48. KRETSCHMANN. An instrument for treating the larger forms of hypertrophied tonsils. *Münch. med. Wochenschr.*, No. 9, 1895.

49. URBANTSCHITSCH, V. Upon the influence of methodical exercise of the hearing upon the auditory sense. *Wien. med. Presse*, No. 43, 1894.

50. GOLDSTEIN, M. A. The possibility of obtaining marked improvement in the treatment of deafness and supposed deaf-mutism by acoustic gymnastics. A system of vocal training of the auditory nerve, as advocated by Prof Urbantschitsch of Vienna. ARCH. OF OTOL., Jan., 1895.

51. MARPLE, W. B. Successful mechanical treatment of some unusual aural complications. *N. Y. Med. Journ.*, June 1, 1895.

52. JACKSON, CHEVALIER. An aural masseur. *Journ. Amer. Med. Assoc.*, May 14, 1895.

53. LESTER, JOHN C. An electric pressure-sound for the direct vibration of the membrana tympani. *N. Y. Med. Journ.*, June 8, 1895.

54. DENNIS, DAVID N. Injector of Delstanche with modified middle-ear tip. *Annals of Ophth. and Otol.*, April, 1895.

55. HEWETSON, H. B. Removal of adenoid vegetations with a description of a new curette. *Brit. Med. Journ.*, April 6, 1895.

56. CHEESEMAN, W. S. Pipette middle-ear syringe. *N. Y. Med. Journ.*, May 11, 1895.

57. HESSLER. Upon the operation for adenoid vegetations with Schütz's new pharyngo-tonsillotome. *Münch med. Wochenschr.*, No. 24, 1895.

58. FONCHER, A. A. A few modifications in the operating process of adenoid tumors. *Annals of Ophth. and Otol.*, April, 1895.

41. PARK's apparatus can be used only by those having an air tank. The nose-piece is made of hard rubber with a conical end for insertion in the nostril—on the other side can be attached a metal tip to fit any automatic cut-off attachment. BACON.

42. RANDALL finds that the indications for using the catheter are similar to those for inflation by the Politzer method ; but the catheter should be preferred in many unilateral cases, also when medication rather than mechanical inflation of the Eustachian tube and tympanum is required, and in the diagnostic study of the tubal condition, and especially in the treatment of the advanced and sclerotic cases in which the labyrinth is involved and politzerization generally makes the patient hear and feel worse. He uses 2 pure silver catheters 3 *mm.* and 2 *mm.*, respectively, in external diameter. Vapors can be used through the catheter, besides a spray and liquids. Of the medicinal vapors, he uses iodines ; as a spray, menthol-camphor in 1 % to 5 % solution ; and as a liquid injection, pure liquid pretrolatum with or without medication. BACON.

43. BERGEAT replaces the ordinary head-band by a perforated strip of hard rubber which is fitted to the surgeon's head by being applied to the latter warm and then left to cool *in situ*. Also in order to protect the head mirror from being soiled during its adjustment by the hand, he fits a lamina of metal to the periphery of the mirror and bends it over the edge of the latter. His third device consists in the use of unblacked aluminium as a mirror-frame. ZARNIKO.

44. BISHOP's instrument is devised to serve two purposes, *i. e.* both for operations on the external auditory canal and for those upon the mastoid process. The end of the handle is fashioned

into a periosteum-separator for the canal and is useful in Stacke's and other operations that require the separation of the integumentary canal from the bony meatus. BACON.

45. PALMER's drill consists of a bur 4½ *mm.* in diameter, which ends in a blunt probe-point. A curved cannula passes through the handle. The bur is connected by a cable, which passes through the cannula and the handle to another revolving handle behind the former. The instrument is worked by hand.

TOEPLITZ.

46. GOLDSTEIN has modified the Duplay-Charrière's and the Bosworth specula so that they can be taken apart for cleansing.

TOEPLITZ.

47. In SPEAR's speculum the handles cross each other by means of a movable joint and one blade advances beyond the other. This arrangement allows the ala nasi to be held outward without a deep introduction of the blades. The more flattened blade is placed against the septum. TOEPLITZ.

48. KRETSCHMANN's instrument, devised for removing the tonsils piecemeal, is shaped like Jurasz's forceps for removing adenoids, except that the cutting portions of the two sharp-edged rings, which fit into each other, are formed on the model of Krause's double curette. MÜLLER.

49. URBANTSCHITSCH reports upon the results of methodical exercises of the hearing made upon 60 inmates of the Lower Austria Deaf-and-Dumb Asylum. The hearing before the exercises were begun and that after they had been carried on for six months were as follows: (1) Ability to understand sentences, before, no case; after, 12 cases. (2) Ability to distinguish words, before, 6 cases; after, 16 cases. (3) Hearing limited to appreciation of vowel sounds, before, 22 cases; after, 21 cases. (4) Only traces of hearing present, before, 32 cases; after, 11 cases.

POLLAK.

50. GOLDSTEIN describes the method as recommended by Urbantschitsch and says that "the gradual progression from vowel hearing to consonants, words, and finally the comprehension of entire sentences, is only possible by a diligent application of 'aural gymnastics.' Beneficial results from the use of this system are equally distributed, either in cases of congenital or acquired deafness" Urbantschitsch reports excellent success in cases of acquired deafness, sequelæ of cerebro-spinal meningitis, typhoid fever, scarlatina, measles, etc. BACON.

51. **Marple** reports three cases, in which he used the rubber splint or paper disc, as recommended by Blake.

The first case was one of chronic catarrhal otitis media, complicated by severe attacks of vertigo and occasional vomiting. The patient always referred to the vertigo as commencing in the right ear, and as coming on when the head was held in a certain position. She also complained of tinnitus on the right side. No relief followed treatment by inflation. The rubber spring or splint was introduced and placed against the short process in the right ear, as the symptom was considered due to some tension anomaly, probably some ligamentous laxness. She experienced great relief as long as the spring, or the paper disc which was substituted for it, remained in position.

The other two cases were those where disagreeable noises were complained of when certain musical notes were sounded in the vicinity. In one, the paper disc was used, and in the other, the rubber spring. Marple quotes Dr. F. S. Lee, who has made elaborate investigation as to the function of the semicircular canals in fishes, as giving his opinion that, reasoning from his observations in fishes, one could locate with probability the lesion, if it was in the semicircular canals, by the direction in which the patient seemed to be falling during the attack of vertigo. In the writer's case, as the motion seemed to be circular, it would seem to indicate, according to Lee, that no one semicircular canal alone was disturbed, but all, or, possibly, the otolithic parts. This disturbance in the labyrinthine pressure might be produced by a minute movement of the ossicular chain attending a tilting of the head if the articular ligaments were loose.

Bacon.

52. In **Jackson's** masseur, motion is imparted to the masseur by a small electric motor run by a battery or storage cell. A rubber tube leads from the bottom of the cylinder and ends in an ear-piece to be inserted in the external auditory meatus. The author claims to have obtained better results with this instrument than with the injector of Delstanche and Siegle's otoscope.

Bacon.

53. **Lester** gives a description with illustrations, of this instrument which he has devised (viz., a motor with pressure sound attached). The short process of the malleus is selected as the point of contact, and the probe is introduced through a speculum and held in position. The vibrations range from five hundred to

fifteen hundred or more a minute. In the cases thus far treated, the best results have been obtained by a minimum length or extent of vibrations and a maximum number of vibrations. The duration of treatment varies, the average being from three to ten seconds at each sitting, and should be repeated from two to three times a week. The writer claims that this instrument is of especial value in cases of sclerosis and in atrophic conditions by virtue of its action in increasing the vascularity and hence the nutrition of the part. BACON.

55. For removal of adenoids, HEWETSON advocates the patient lying flat with head rolled over towards operator on the right, and uses a modification of Hartmann's curette ; the modification presents a semicircular scraping double edge, and which can, by an alteration of pressure, be made to scrape with its presenting curve upwards, backwards, and even downwards. It is blunt towards the soft palate, and is set at an obtuse angle on the shaft. CHEATLE.

56. CHEESEMAN's instrument is similar to Buck's glass pipette, except that the writer has substituted hard rubber for the glass, with an ordinary pipette bulb and a fine flexible rubber tip, curved slightly at the end for ready introduction into perforations. BACON.

57. In Schütz's new instrument, both knife and traction-spring are made of elastic steel, and are connected with the traction-bar by a simple crotchet. The price has been reduced from forty-five to twenty-five marks. Hemorrhage, according to HESSLER, is usually slight, and secondary hemorrhage is rare. The administration of an anæsthetic is commonly not required, nor is any local after-treatment necessary. In about 5 per cent. of the cases there was a suspicion of tuberculosis In these the cure was preceded in several instances by symptoms of general infection (swelling of the cervical lymphatic glands, fever, etc.). MÜLLER.

58. FONCHER devises for the operation upon adenoids a combined mouth-gag and tongue-depressor, which is constructed like the O'Dwyer-Denhard mouth-gag, but the lower blade consists of a tongue-spatula, the upper serving for insertion into the upper teeth. The difficulties encountered by Foncher in operating on struggling patients, can be much better overcome by narcosis than by this instrument, which will facilitate the breaking of the front teeth. Foncher also modified the Gottstein curette, or rather its

Higguet-Munger's indented form, by furnishing it with a handle set at right angles, as in Mackenzie's tonsillotome.

TOEPLITZ.

EXTERNAL EAR.

59. GIRARD. Upon a peculiar malformation of the ears. *Correspbl. f. Schweizer Aerzte*, 1895, p. 151.

60. BURGER, H. Congenital malformation of the auricle and otoplasty. *Niederl. tydschrieft, v. Geneesk*, May 5, 1894.

61. HOLLINGER, J. An unusual case of aural deformity. Operation. *Annals of Ophth. and Otol.*, April, 1895.

62. GROVE, H. N. An artificial auricle. *Lancet*, Feb 2, 1895.

63. SMITH, S. MACCUEN. Furunculosis of the external auditory canal. *Med. News*, Jan. 19, 1895.

64. HERZOG, MAXIMILIAN. Verticillium Graphii as the cause of an obstinate otitis externa diffusa. ARCHIVES OF OTOLOGY, Jan., 1895.

65. HIGHET, H. C. Otomycosis. *Br. Med. Journ.*, March 9, 1895.

66. LEDERMAN, M. D. Diffuse external otitis. *N. Y. Med. Journ.*, May 18, 1895.

67. LEDERMAN, M. D. Foreign bodies in the ear and nose. *Annals of Ophth. and Otol.*, April, 1895.

68. WEISSENSTEIN. Foreign bodies in the ear. *Würtb. med. Corresp.-Blatt*, No. 14, 1895.

69. CORRADI. Obstinate stenoses of the cartilaginous portion of the external auditory canals, and their treatment. *Annales des mal. de l'oreille*, etc., No. 4, 1895.

70. LANNOIS. Rupture of the tympanum in a man who had been hanged. *Ib.*, No. 6, 1895.

59. In the family of the patient that GIRARD presented there was an hereditary malformation which this author calls "hunting-dog's ear." In this the upper part of the auricle is very greatly prolonged and hangs down in a flap so as to conceal the entrance to the meatus. In one ear the lobule was rudimentary. Otherwise, and except for a general thinning of the cartilage, which would in part account for the anomaly, the auricle was well formed. Girard operated with success upon the brother of

the patient exhibited ; excising a portion of skin at the retro-auricular margin, so as to be able to attach the auricle closer to the head, and then diminishing the size of the overgrown auricle by means of semilunar incisions, which, however, did not encroach upon the helix. The author believes that it would be a good plan to use a hood for small children, for those at least who show an hereditary tendency to the development of spreading ears. SIEBENMANN.

60. BURGER operated upon two cases of the deformity called "cat's-ear." In one case the external auditory canal was entirely undeveloped, in the other was rudimentary. The upper end of the auricle, which in these cases is adherent below and in front of the auditory canal, was dissected off, reflected up 180°, and attached in its new position. POSTHUMUS MEYJES.

61. HOLLINGER's case was one where the whole head was asymmetric ; the left side of the face was inferior to the right in all dimensions, and showed a marked depression which extended from the ramus of the lower maxilla to the linea temporalis, and from the zygoma to the occipital region. The lobule was smaller than usual. The line of insertion of the auricle formed three quarters of a circle, and the free margin of the auricle was bent upon itself forward and at an acute angle. The tragus was missing. The auricle was corrected, half of the auricle was dissected from its broad attachment and sewed to an incision in the vertical prolongation of the still adherent part. The result was a small vertical cicatrix in front of the ear and a somewhat pointed ear. BACON.

62. To the dental surgeon GROVE praise is due for the following careful and ingenious method for making and fixing an artificial auricle. A plaster cast is first taken of the side of the head, on which an auricle is built up in wax to match the healthy auricle ; from this wax model an auricle is made in vulcanite and aluminum, tinted and enamelled to harmonize with complexion. Adhesion to head effected by means of a saturated solution of mastic in absolute alcohol. CHEATLE.

63. SMITH uses camphor-phenol applied locally to abort a furuncle, and from an experience extending over more than eight years, feels justified in recommending it. An ointment of yellow mercurous oxide gr. ½ – ʒ i. can be substituted for the camphor-phenol as soon as inflammation begins to subside. He employs other measures in different cases, such as blood-letting, antiseptic

irrigation of the canal, and dry cold. He avoids poultices, and gives tonics and alteratives, and especially Fowler's solution of arsenic. When an operation is necessary he makes a free incision through the furuncle. BACON.

64. HERZOG reports a case of diffuse otitis externa of a very obstinate nature in which he obtained a pure culture of the mould. He refers to the literature of the subject, and reports a cure in his case from the instillation of a 4 per cent. solution of salicylic acid in alcohol, being the treatment proposed by Bezold.

BACON.

65. HIGHET considers otomycosis the most frequent affection of the external meatus in Singapore; he lays special stress upon the fact of its frequency compared with Europe. Chief factor being sea-bathing. Complications being: diffuse inflammation of external meatus, acute and chronic serous catarrh of middle ear, perforation of membrane, swelling and suppuration of glands, eczema of meatus and pinna. Treatment: thorough clearing, and local applications of solution of perchloride of mercury in rectified spirit 1:1000. CHEATLE.

66. The patient, a female, aged twenty-three years, on account of intense itching in both auditory canals, syringed the ears with a strong solution of carbolic acid, causing a diffuse otitis externa, and when first seen by LEDERMAN two days later, the face was very puffy, owing to a serous infiltration, which had extended over the malar and external infraorbital regions. The conjunctiva of both eyes was much infected. Diffuse swelling of both auricles existed, and on the left side the swelling extended over the angle of the jaw. Serum filled the fossæ of the auricles and exuded from beneath a pseudo-membrane. The watch could not be heard with either ear. The patient made a good recovery.

BACON.

68. WEISSENSTEIN, after treating minutely of the whole subject of foreign bodies in their clinical, anatomical, and therapeutical aspects, reports the case of an eight-year-old girl whose auditory canal, when she came under observation, was greatly narrowed by inflammatory swelling. When the canal was syringed the water passed into the naso-pharynx. Instillations of an alcoholic solution of boric acid were prescribed at first, but, as the otorrhœa increased and pain developed behind the ear and over the vertex, the patient was anæsthetized, and the auricle and auditory canal were detached and turned forward. The foreign

body—a quadrangular piece of glass which for the most part lay in the tympanic cavity—was removed without injury to the bony portion of the external wall of the tympanum. The wound healed kindly, the secretion ceased in five weeks, and hearing became normal. A stenosis of the canal at the junction of the bony and cartilaginous portions disappeared almost completely.

MÜLLER.

69. In CORRADI's first case there was moderate stenosis in the cartilaginous meatus with otorrhœa produced by a gun-shot wound of the posterior wall of the canal. Attempts at dilatation without cutting made matters worse to such an extent that the canal scarcely admitted a pin's head, and severe symptoms of retention set in. A circular incision was then made, and drainage effected down to the antrum. Subsequent dilatation with laminaria tents was required and ultimately a cure was effected. In the second case there was erysipelas which produced an otorrhœa, recurred fifteen times during the year, and finally left a permanent thickening of the soft parts of the right side of the face and narrowing of the lumen of the left auditory canal. This latter depended, not so much upon an increase in the thickness of the tissues as an increase in their length, so that when the speculum was withdrawn the parts could be seen to telescope into each other. A segment about 0.5 *cm* wide was resected and a tampon of iodoform gauze inserted which afterwards was replaced by a drainage tube. The condition was cured, although the discharge from the middle ear persisted. ZIMMERMANN.

70. LANNOIS examined a man who had been hanged, and found, besides marked cyanosis of the face, ecchymosis of the left conjunctiva, fracture of the hyoid bone, and hemorrhage into the pia mater, an oval rupture in the postero-inferior quadrant with reddened margins, and punctate hemorrhages and reddening of the tympanic mucous membrane. ZIMMERMANN.

MIDDLE EAR.

71. WHITE, F. Complete deafness for twenty-four years from Eustachian closure; perfect recovery after a course of politzerization. *Brit. Med. Journ.*, March 2, 1895.

72. HEFLEBOWER, R. C. Clonic spasm of the tensor tympani. *N. Y. Med. Journ*, March 16, 1895.

73. LERMOYEZ and HELME. The staphylococci of otorrhœa. *Ann. des mal. de l'oreille, du lar., et du phar.*, Jan., 1895.

74. Pes and Gradenigo. Pyogenic staphylococci in acute and chronic otitis media, and the method of treating the latter. *Ibid.*, 1895.

75. Hamon du Fougeray. Antiseptic treatment of chronic simple suppurations of the tympanum. *Annales de mal. de l'oreille, etc.*, No. 6, 1895.

76. Meyjes, Posthumus. The treatment of acute infection of the middle ear. *Med. Weekblad von Noord and Zuid Nederland*, June 9, 1894.

77. Nichols, J. E. H. The dry treatment of otitis media purulenta. *N. Y. Med. Journ.*, Feb., 1894.

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79. Dench, E. B. What shall the general practitioner do for acute otitis? *Amer. Medico-Surg. Bull.*, May 1, 1895.

80. Nichols, J. E. H. Otitis in small children. *Ib.*, May 1, 1895.

81. Bishop, S. S. Acute catarrh of the ear of an epidemic character. *Med. and Surg. Reporter*, April 27, 1895.

82. Kutscher. Upon the etiology of a case of otitis media developing in the course of a pharyngeal diphtheria. *Deutsche med. Wochenschr.*, No. 10, 1895.

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84. Dench, E. B. Diseases of the ear dependent on the grip, *Med. Record*, April 6, 1895.

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86. Okuneff, W. N. Upon the employment of trichloracetic acid in chronic purulent inflammations of the middle ear. *Monatsschr. f. Ohrenheilk.*, No. 1, 1895.

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90. STETTER. Annual report of the Dispensary for Diseases of the Ear, Nose, Throat, and Mouth. [Remarks on Wilde's incision.] *Monatsschr. f. Ohrenheilk*, No. 24, 1895.

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92. HARTMANN, A. Historical remarks upon the operation of exposing the tympanic cupola-space [attic] and the mastoid antrum. ARCHIVES OF OTOL., Jan., 1895.

93. ZAUFAL, E. Upon dermoplasty combined with the radical operation for exposing the tympanic cavity. *Prag. med. Wochenschr.*, No. 16, 1895.

94. HEFLEBOWER, R. C. The removal of the auditory ossicles for the relief of chronic deafness and other abnormal conditions. *Bost. Med. and Surg. Journ.*, Jan. 31, 1895.

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96. JACK, F. L. Remarks on stapedectomy. *Bost. Med. and Surg. Journ.*, Jan. 10, 1895.

97. BISHOP, S. S. Operations on the drumhead and ossicles. *Guillard's Med. Journ.*, Feb., 1895.

98. BUCK, A. H. The prognosis of operations upon the mastoid process of diabetic persons. *N. Y. Med. Journ.*, June 29, 1895.

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103. FETTEROLF, GEO. A case of suppurative external mastoiditis. *Phila. Polyclinic*, June 1, 1895.

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121. MURRAY, R. W. Three cases of intracranial abscess; recovery in each case. *Brit. Med. Journ.*, Jan. 5, 1895.

122. EVANS, O. C. Cerebral abscess in frontal lobe secondary to middle-ear suppuration. *Ibid.*, March 23, 1895.

123. JOEL. Contributions to the surgery of the brain. *Deut. med. Wochenschr.*, No. 8, 1895.

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125. MORTON, C. A. A case of otitic pyæmia. *Brit. Med. Journ.*, Jan. 5, 1895.

126. DEANESLY, E. A case of aural pyæmia without sinus-thrombosis treated by ligature of the internal jugular vein and plugging of the lateral sinus. *Ibid.*, April 13, 1895.

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128. GOLDSTEIN, M. A. Exfoliation of the cochlea, vestibule, and semicircular canals. *Annals of Ophth. and Otol.*, April, 1895.

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71. WHITE relates a case of a female, aged thirty-five years, deaf since nine years old; nothing heard at either meatus. Politzerization daily, hearing normal in three months, with marked increase in mental powers. Before treatment patient good lip-reader, and could make use of limited number of words; on establishment of hearing, conversation by the lips not understood at all. CHEATLE.

72. HEFLEBOWER reports a case of a woman aged thirty-five years, married, who was in excellent health. In the right ear there was a large perforation and chronic discharge, which ceased under four weeks' treatment, and the perforation became much

smaller. The hearing distance for the watch was one inch. The drum-membrane in the left ear was somewhat lax, and hearing distance for watch sixteen inches. The patient sought advice on account of a clicking noise in the ears which had persisted for several years and which was accompanied by a twitching of the muscles of the throat. It was worse on exertion, sudden fright, and during menstruation. On observing the drumheads, no movement could be discovered in the right ear, although the clicking noise could be faintly heard. In the left ear, a very perceptible indrawing of the central and lower part of the membrane could be seen at the time of each click; the muscles of the soft palate contracted synchronously with the tensor tympani. The writer thinks that this affection (clonic spasm of the tensor tympani) has all the characteristics of a chorea minor. [*Cf.* No. 17, *supra.*] BACON.

73. The bacteriological investigations of LERMOYEZ and HELME seem to show that the majority of acute inflammations of the middle ear are due solely to micro-organisms. The organisms most frequently found are streptococci and pneumococci. Other micro-organisms, it is true, are associated with these, but they do not put in an appearance—and this is a very important fact—until the drum-membrane is perforated. According to these authors the presence of staphylococci is a proof that the affection is going to be a chronic one. Staphylococci do not enter the tympanum from the Eustachian tube, but only from the auditory canal, and, while they may have been present in the latter from the first, they are usually introduced with the instruments or dressings, and particularly with cotton. The latter should, therefore, be well sterilized, and in order to do this the authors recommend that the cotton-holder, each time that it is freshly charged, be dipped into an alcoholic solution of boric acid and then ignited. The cotton is thus sterilized without losing its hygroscopic qualities. [*Cf.* No. 33, *supra.*]

74. PES and GRADENIGO oppose Lermoyez and Helme's theory in all points. Against the assumption of the latter authors that staphylococci occur only as a secondary phenomenon in the tympanum, they allege that they do occur primarily even when the drum-membrane has not been opened, and quite as often indeed as do the diplococci and streptococci. In refutation of the statement that staphylococci can enter the tympanum only through the external canal they adduce a case in which the latter was kept

perfectly free from micro-organisms and yet staphylococci developed. Third, in opposition to Lermoyez and Helme's belief that the presence of staphylococci is the chief cause of chronicity, they point out the fact that Zaufal and others have shown that in markedly chronic cases the most different kinds of micro-organisms may be found. Chronicity, in fact, depends less upon the kind of micro-organism present than upon certain constitutional and local causes. Among the latter are obstacles to the discharge of pus, the persistence of inflammation in the naso-pharynx and external canal, and the mastoid complications. Lastly, the mode of infection which Lermoyez and Helme regard as so frequent, namely, that by the introduction of cotton into the canal, they say cannot occur if the otologist is scientific and knows his business. Besides, the cotton tampon is rarely carried into the canal as far as the drum-membrane, and the cotton used by the patient himself usually contains nothing but saprophytes. In conclusion, the authors give a synopsis of the results obtained in their acute cases which have been treated exclusively by means of tampons of iodoform gauze. Comparison of these statistics with others cannot be made because the latter do not give precise data as regards the duration of the disease from the first appearance of the pain to the disappearance of secretion. In their 167 cases perforation occurred in 96. Of these 49 could be followed until a cure took place, which was on an average in 14 days. Mastoid and endocranial complications occurred in 6.2 per cent. Among the latter was an unusually rapid form of meningitis, which ended fatally in 24 hours.

The paper is suggestive, and well worth reading.

ZIMMERMANN.

75. HAMON DU FOUGERAY describes his method of treating chronic purulent otitis media. This is based upon Lermoyez and Helme's theories (see No. 73, *supra*), and consists in the insertion of a tampon of iodoform gauze into the canal after preliminary cleansing of the latter with sterilized cotton. ZIMMERMANN.

76. POSTHUMUS MEYJES believes that in acute otitis media neither injections into the external canal nor politzerization should be used. All that is necessary is to instill antiseptics (sublimate) when the membrane becomes perforated spontaneously or when paracentesis (which should be performed as early as possible) has resulted in the production of much secretion. Politzerization may, however, be performed at the end of the second week, if the

hearing has not by that time become normal. The fact that no mastoid complications, apart from slight inflammation readily cured by the application of iodine and a cotton dressing, were seen by him among the several hundred cases that he treated he ascribes to this abstinence from the use of inflations and the syringe. POSTHUMUS MEYJES.

77. NICHOLS believes that in suppurative otitis media the secretions should be removed as soon as formed. He uses to cleanse the ear a suitable syringe and peroxide of hydrogen solution. The ears should be inspected in the early stage at least twice a week, until the bad symptoms are relieved. A small perforation in the drumhead should be enlarged to afford proper drainage. A curette should be used to remove granulations, necrosed tissue, etc., and caustics of moderate strength should be subsequently applied. As astringents, he recommends alumnol and absolute alcohol. Europhene and iodoform he considers objectionable. Proper treatment should be directed to the nose and naso-pharynx. BACON.

78. MÜLLER recommends early paracentesis in all inflammations of the middle ear that are not complicated by general diseases, such as tuberculosis and diabetes. He holds that it exerts an antiphlogistic, anodyne, and abortive action. POLLAK.

79. DENCH refers to the symptoms of acute otitis in children, and considers pain the most prominent. Local abstraction of blood by means of the wet cup is most important when pain is due to inflammation of the middle or external ear. The patient should at the same time be kept in bed and purged. Opiates are sometimes necessary, and he recommends dry heat instead of moist heat. After the discharge appears, antiseptic irrigations are necessary. The quantity of the discharge should not be diminished till the temperature has become normal and all pain has disappeared. When there is tenderness behind the ear, he uses an ice-bag, but never longer than forty-eight hours at a time Tumefaction, whether of the canal or caused by displacement of the membrana tympani, when associated with a history of pain, is sufficient to warrant a free incision. BACON.

80. NICHOLS says that in children chronic rhinitis of the catarrhal variety is most common. Before cleansing the nares, the child should be turned on its face, and a little 2 per cent. solution of cocaine sprayed into each nostril. An olive-shaped nozzle from a fountain-syringe should be introduced into one

nostril, and a 2-per-cent. solution of boric acid used. This treatment should be carried out in the exanthemata. Digital examination will show the presence of adenoids. BACON.

81. During the epidemics of influenza, BISHOP observed that the aural complications usually appear about the fifth day after the seizure. The pain is intense. Within twelve or twenty-four hours effusion of serum occurs. The proportion of cases in which there is a mastoid involvement is vastly larger than in simple acute otitis media. The tendency to suppuration is far greater also. The constitutional disturbance is more profound and the disease less easily controlled. BACON.

82. KUTSCHER succeeded in obtaining an almost pure culture of diphtheria bacilli from the pus derived from the ear of a boy suffering from laryngeal and pharyngeal diphtheria, and thinks that there is no doubt but that these bacilli were the cause of the otorrhœa. NOLTENIUS.

83. GURANOWSKI gives a systematic presentation of the subject of tuberculous inflammations of the middle ear, based upon several cases that he observed himself and upon an exhaustive review of the literature. In the matter of diagnosis he lays special stress upon the painlessness with which the perforations of the drum-membrane develop, upon the rapidity with which destruction of the whole membrane and caries of the ossicles and mastoid follow, upon the presence of bacilli in the discharge from the ear, and upon the simultaneous involvement of other organs. The latter feature was entirely absent at first in one of the author's cases, so that the tuberculosis here apparently originated in the ear. KILLIAN.

84. DENCH lays great stress on the importance of making an early incision in the drumhead, as the discharge is apt to be of much shorter duration when this is done. The ear should be kept clean by irrigation, and cold applications should be used in the early stage of mastoid inflammation, but should not be continued longer than forty-eight hours. The mastoid cells should be opened when pus has formed. BACON.

85. In BERNSTEIN's experience the present epidemic of grip has been unusually prolific of serious secondary diseases of the ear. Chief characteristics are intense hyperæmia and pain disproportionate to the conditions usually seen. During an attack of the grip or convalescence from it, typical symptoms of acute gastric catarrh supervene, viz., headache, nausea, foul breath,

furred tongue, and great discomfort. After several such days, the ear begins to discharge; great tenderness over mastoid and tragus develops. The case may now progress favorably as regards pain, or the latter, after a short remission, may again become severe and we then have a regular mastoiditis. BACON.

86. OKUNEFF, after preliminary cocainization, applies crystalline trichloracetic acid, and then syringes the ear out. By repeated applications of this sort he has succeeded in checking the discharge in 38 out of 42 cases of chronic otorrhœa, and in more than half the cases has produced cicatrization of the perforation in the membrana tympani. KILLIAN.

88. STEWART lays great stress upon the importance of going to the seat of the disease and not merely treating the case by the instillations of astringent solutions and the removal of granulations. When the ossicles are carious, they should be removed, and each case should be treated on true surgical principles.

BACON.

89. RIPAULT and DEMOULIN illustrate by means of several cases, two of which are described *in extenso*, not only the uselessness of the simple Wilde's incision, but also the danger of secondary infection that it may give rise to. In one case subcutaneous fistulæ and peripheral facial paralysis developed; in the other case, besides fistulæ leading down to the mastoid process, which was bare, and to the occipital bone, a fistula was formed communicating with the lateral joint of the atlas and necessitating resection of the arch of the vertebra. Both cases ultimately got well.

ZIMMERMANN.

90. STETTER recommends Wilde's incision as the first operative procedure to be employed in all cases of periostitis of the mastoid following acute or chronic suppuration of the middle ear. It may effect a cure even in cases with meningeal irritation. It is only in cases where the bone itself shows changes that the antrum is to be opened immediately; otherwise this latter operation may be put off and in many cases will not have to be performed at all. KILLIAN.

91. In this paper, SEAMAN does not go into detail in regard to the treatment of chronic purulent otitis media, but urges the importance of recognizing the necessity of such treatment when it exists, and points out briefly the dangerous sequelæ which are sooner or later liable to arise. He refers to several writers on this subject and the indications for operating. BACON.

92. In this article, **Hartmann** reviews the methods of operating as recommended by Küster, von Bergmann, Zaufal, and others, and gives the results of measurements made by himself, of specimens which consisted of horizontal sections of macerated temporal bones. He concludes the paper by saying that "the operation of exposing the cupola-space and the antrum is less dangerous than a chiselling of the mastoid as it used to be done, and, moreover, it is the only operation that can with certainty effect a cure of a middle-ear suppuration which is not relieved by the other means mentioned above." BACON.

93. **Zaufal** reports upon five cases operated upon by Körner's method, and from the results so far obtained is led to declare that he will employ it from now on in conjunction with free exposure of the tympanic cavity in all suitable cases. POLLAK.

94. **Heflebower** believes this operation is indicated in deafness as well as headache, vertigo, tinnitus, etc., accompanying this condition, and in adhesions, and chronic suppuration from the middle-ear, especially when the ossicles are necrotic. BACON.

95. As a result of massage, the hearing has improved and the tinnitus has been relieved in over 90 per cent. of **Lauterbach's** cases of non-suppurative disease. In about half of the cases, this method of treatment has removed the vertiginous symptoms. The writer does not think that the ossicles should be removed until the patient has been under treatment for at least three months, and during this time massage and other necessary treatment should be tried. In case of failure, then an operation.

BACON.

96. **Jack** concludes his paper, in considering the results of a personal experience for the last two years, by saying:

(1) That the best results in hearing have been obtained in cases of early removal of the bone, and that the operation is of little use in cases of otitis media insidiosa (sclerosis).

(2) That cases of chronic aural vertigo have been permanently relieved by liberation of the stapes or by extraction of the bone itself.

(3) That in cases of non-suppurative disease of the middle ear, as well as the class of cases the result of a chronic suppurative process, surgical mobilization should first be tried before an attempt is made to remove the stapes.

(4) That most operations for mobilizing the stapes or freeing the oval window must be looked upon as largely experimental,

and that in many cases a fracture of the crura occurs at the time of attempted extraction, leaving the base plate. BACON.

97. BISHOP presented a patient who had had the drumhead and malleus removed by a surgeon two years previously, but no improvement in either the hearing or tinnitus followed. He believes there are certain cases that can be benefited by this operation, viz., those in which the perceptive organ is not involved and where the loss of hearing is due entirely to the diseased condition of the conducting apparatus. BACON.

98. BUCK gives a short resumé of the 10 cases of mastoid disease occurring in diabetes that have so far been reported. Of this number, which includes 2 of his own, 7 were operated upon ; and of these, 5 died. Buck now adds 4 cases of his own, which were all operated upon ; 2 of the number dying, one of diabetic coma, the other of sinus-phlebitis. Buck is convinced that subsequent statistics ought to give a better prognosis, since it is to be anticipated that, in the future, operations will be performed at a comparatively early stage of the disease,—certainly before the sinus or dura has become implicated. In almost all the cases so far known the operation was performed comparatively late.

MÜLLER.

99. BROCA and LUBET-BARBON [in a work already reviewed in these ARCHIVES (April, 1895)] give a very precise account of everything that recent investigations have afforded as to inflammations of the mastoid. The work is based upon a material of 128 cases, with 143 operations performed for acute and chronic suppuration (other affections, such as cholesteatoma, being excluded from consideration). The pathologico-anatomical observations of the two authors, *e. g.*, that almost every acute otitis is accompanied by a mastoiditis, that in the production of the latter the antrum plays a very important part, etc., are in conformity with the statements which we usually find in German works.

In considering the passages by which the pus is propagated, the authors discuss at length those varieties of periostitis which extend from the middle ear along the auditory canal and, without involving the pneumatic cells, affect the mastoid directly.

That there is an osteomyelitis similar to that which occurs in the long bones they do not believe. Very suggestive are the various points collected in the section on diagnosis and that are important for the differentiation of the various lesions. With regard to the possibility of the development of a suppuration of the mastoid which is not produced by an antecedent inflammation of the middle ear, the authors profess themselves as very sceptical, although two cases that they record show that there may be a condensing ostitis of the mastoid of apparently spontaneous origin. The section upon therapeutics is very definite in its prescriptions ; trephining is recommended in the acute forms, the simple Wilde's incision being in their opinion only palliative. In the chronic forms they regard a free exposure of the antrum and aditus as invariably required. The methods themselves are minutely described and, as in the case of the whole work, are illustrated by instructive histories of cases. A comprehensive statistical presentation of the material that has come under their own observation concludes this instructive treatise.

ZIMMERMANN.

100. In STOUT's first case an opening was found in the mastoid, size of small pin-head. This was enlarged and abscess cavity cleaned of pus and granulations. The patient made a good recovery. In the second case, rupture of the abscess occurred in the digastric fossa, causing an abscess in the neck. Pressure on the latter caused the pus to well up through the opening in the mastoid. An operation was performed, and the patient was cured. BACON.

101. SMITH has seen during the past few months 11 cases of mastoid empyema resulting from acute otitis media. The ages of the patients varied from nine months to forty-four years. In 4 cases the abscess was superficial ; of the remaining cases, in 5 the disease was confined to the antrum, while in 2 the mastoid cells were involved as well. The writer lays great stress on the early recognition and prompt treatment of all acute diseases of the ear, thus preventing mastoid complications. BACON.

102. In BAKER's case, acute purulent otitis media was due to snuffing up cold water from the palm of the hand, some entering the Eustachian tube and tympanum. It became necessary to open the mastoid cells subsequently. BACON.

103. FETTEROLF's patient, aged thirty, a female, had an attack of acute coryza, lasting about three weeks, at the end of which time she had violent pain in the left ear. A month later she came under observation, complaining of pain and tenderness over the left mastoid. Several weeks later, it was necessary to make an incision down to the bone to evacuate about 15 *cc.* of pus. Careful probing failed to reveal denuded bone or a sinus. In two weeks the patient recovered. BACON.

104. Roberts reports a case of purulent otitis media of eight weeks' standing, followed by mastoid disease, in which it was necessary to open the mastoid cells and to remove a portion of softened bone. The lateral sinus was exposed, and considerable hemorrhage followed, but this was checked by packing the opening with bichloride gauze. The wound was entirely healed in six weeks. The case serves, in the author's opinion, "to illustrate the power of nature in a fairly healthy constitution, to withstand the ravages of diseased action in the vicinity of vital organs, and the hopeful outlook we may entertain as to a result of radical operations conducted in accordance with well-established surgical principles and under careful antiseptic precautions." Bacon.

105. Bacon's patient, a little girl, two years of age, was shown before the Society of the Alumni of Bellevue Hospital. She was first seen Nov. 9, 1894. The right ear had begun to discharge nineteen months before, and four months ago a swelling had suddenly appeared behind the ear, and had subsequently ruptured spontaneously. An incision was made down to the bone, just behind the attachment of the auricle, and a sequestrum about an inch by three quarters of an inch in size, was removed. The entire cavity was scraped, and many unhealthy granulations were removed with the curette. The wound healed rapidly.

Bacon.

106. Bacon's patient, a boy aged ten, came to the Infirmary Nov. 4, 1894, having a careworn, anxious appearance, cold hands, pulse full and bounding and more rapid than normal. He complained of great pain in the mastoid (left), and he heard the watch on that side by contact only. The auricle stood out prominently, and there was decided fluctuation over the mastoid process. The left membrana tympani was dullish red and macerated. He had a temperature of 103° F. The boy was immediately etherized, and the post-aural abscess opened, giving exit to about a drachm of pus. The mastoid was then opened, and pus and softened bone removed as far as the tip. The lateral sinus was found normal, but pus was observed coming from the middle cranial fossa, so that it was necessary to cut away a considerable area of bone about the antrum and above it to explore the dura. The latter was found thickened, but no pus was discovered in the brain itself by means of an exploring needle. The pus had evidently forced its way into the middle cranial fossa through a small perforation in the upper wall of the middle ear, although none could

be detected. The wound healed rapidly, and the boy made an excellent recovery. BACON.

107. LAKE, at a meeting of the British Laryngological, Rhinological, and Otological Society, draws attention to facial paralysis in recent otitis media, reporting 4 cases among 658 cases of recent otitis seen at St. Thomas's Hospital. CHEATLE.

108. POLLAK reports a case of the spontaneous rupture of a cerebral abscess into the cavity produced by the performance of a typical mastoid operation. The symptoms upon which the diagnosis of an abscess in the right temporal lobe was made were : Unconsciousness, paralysis of the left upper and lower extremities, Cheyne-Stokes's breathing, left facial paresis, bilateral immobility of the pupils with mydriasis, and moderate ptosis of the right eyelid. These symptoms disappeared after the rupture of the abscess. The patient recovered completely. Pollak, in cases of this sort in which there is even a suspicion of the presence of an abscess in the temporal lobe, advises that in the performance of the mastoid operation the dura over the tegmen mastoideum should be exposed, and an exploratory incision made through it. POLLAK.

109. EULENSTEIN's paper is a statistical summary of the 18 cases so far known of cerebral abscess developing after acute inflammation of the ear or of the temporal bone, and a detailed description of a case which he himself observed. The main facts in regard to the latter are as follows : A man, forty-five years of age, had, as the result of influenza, an acute attack of isolated inflammation of the right mastoid. This was chiselled. The excruciating headache in the right side of the head, however, persisted, and after five weeks increased, together with the development of singultus, weakness, and diminution of tactile sensibility and temperature sense in the left arm and leg, which also became colder to the touch, and diminution of hearing on the left side. No somnolence nor fever. Later, facial paresis and vomiting. Operation. Large abscess of temporal lobe. Subsequently return of the symptoms owing to retention of pus. Re-opening. Recovery. KILLIAN.

110. PARK reports a case under this heading and draws the following conclusions :

(1) That we may have optic neuritis in the early stages of acute purulent inflammation of the middle ear and that the ophthalmoscope should be used in all acute and chronic cases of otitis media.

(2) That symptoms simulating cerebral abscess and sinus-thrombosis may be produced by direct septic infection from the middle ear.

(3) That one should establish thorough drainage in all acute cases, and that if after the acute symptoms have subsided, and all treatment is of no avail, and the purulent discharge is not arrested, should curette the tympanic cavity, by which means, in most cases, further infection is prevented.

(4) That when there are symptoms simulating cerebral abscess, etc., as in this case, errors of diagnosis are liable to occur, and as a precautionary measure one should first curette and clean out all carious and necrosed ossicles and diseased adventitious matter. No further operative measures may be required. But if cerebral complications are still present, we should open the mastoid regardless of whether it is tender upon pressure or not, and if this is of no avail, then open the skull as per indication of symptoms. BACON.

111. HAUSBERG begins his paper with a history of the operation of trephining the skull for cerebral abscesses of otitic origin, and refers to the investigations in this field and the various operations performed by surgeons from time to time. He refers to measurements made by himself and to the dangers of the operation; also to the symptoms of cerebral abscess both from a clinical and physiological standpoint, and reports a case of subdural abscess which came under his observation. He describes the different steps in the operation of trephining, and concludes his paper by a reference to abscesses in the cerebellum.

BACON.

112. MOSS reports two cases, one being a female patient, aged twenty-seven, who had, six weeks before observation, had measles, followed by a suppuration of the ear and mastoid disease, and further complicated with sinus-thrombosis. The patient was operated upon and recovered. The second case was that of a female, aged fifty-one, who had mastoid sclerosis and a cerebral abscess. An operation was performed, but the patient died. No post-mortem. BACON.

113. In GRÜNEWALD's patient, aged forty-three, swelling and diffuse inflammation of the right external canal set in but soon abated. After the patient had been apparently well for five weeks, there developed headache with tenderness and swelling behind the right ear. This was incised and pus evacuated from

a cavity involving the whole mastoid process. This was laid freely open. Three weeks later renewed headache, chills, and tenderness over the right internal jugular vein. Second operation with removal of the whole bony covering of the mastoid process. Fourteen days later left facial paralysis followed by paresis of the whole left half of the body, and general torpor and apathy. Trephining and repeated punctures of the brain made without result. Three days later a second trephining, which was also without result. A few days afterwards the patient died. The autopsy showed an abscess as large as a hen's egg, and with a firm membranous envelope in the right temporal lobe. Dura over the tegmen tympani grayish-red, the bone in the same situation porous and yellowish. The striking feature of the case was the entire absence of discharge from the middle ear. Extension to the brain obviously took place through the lymphatic channels in the tegmen tympani. MÜLLER.

114. CARSON in his surgical practice has observed nine cases of abscess of the brain within a period extending a little over three years, and of this number eight resulted from disease of the middle ear. Of these cases he gives the notes of one. In this case, he opened the mastoid antrum on account of a chronic suppurative otitis media of several years' duration, in a lad of fifteen years. For the preceding two weeks he had had severe pain in the ear, with free discharge, and tenderness on pressure over the mastoid. The antrum and middle ear were curetted. The improvement resulting from the operation was soon followed by symptoms of brain abscess, viz., slow pulse, subnormal temperature, vomiting, pain in the back of the neck, restlessness, wild and profane language, exaggeration of tendon reflexes, severe pain in the head. An opening was made through the cranium an inch and a quarter behind the middle of the external meatus, and three fourths of an inch above Reid's base line. In this opening the brain protruded and was entirely free from pulsation. Temporal lobes explored with negative results The opening was then enlarged downward and the cerebellum explored, when there was a gush of pus. The patient survived the operation only an hour and a half. BACON.

115. While BARROW was chiselling a mastoid for a temporo-sphenoidal abscess, pus was seen to run from nose and mouth. At the post-mortem examination, a collection of pus was found under the right frontal lobe, escaping through a perforation in the

cribriform plate of the ethmoid by the side of the crista galli, and a tract was found running to temporo-sphenoidal lobe, in which was an abscess cavity. CHEATLE.

116. At a meeting of the Edinburgh Medical Chirurgical Society, LEITH exhibited the temporal bone of a girl aged fourteen years, who had symptoms resembling tubercular meningitis. At the post-mortem examination the middle ear was found carious, and an abscess was found at the junction of occipital and parietal lobes, measuring two inches across. CHEATLE.

117. At a meeting of the Medical Society of Australia, MOORE showed a girl aged nine years, who, having had discharge from the left ear for several years, suddenly was seized with a convulsion and coma, with right hemiplegia. At first operation pus not found; at second, five days later, two ounces of pus were evacuated from the temporo-sphenoidal lobe. Speech and power in leg regained, but arm remained weak with some contraction of fingers. CHEATLE.

118. Following are the notes of MORRIS's case: Patient, aged twenty-seven, male. Present illness began four weeks before admission to hospital (admitted Oct. 4, 1894) by sudden pain in the left ear, followed by a chill. On the third day of his illness he vomited, and continued to do so every day subsequently. Four days later he had a second chill, followed by delirium, which lasted ten days. During the period of the delirium he had several chills, but no earache during this time. When admitted, the pulse was 66, temperature below normal, respirations 20. No tender spots about the ear or cranium, but there was foul odor from the left auditory meatus. Internal jugular vein on the left side was like whip-cord and engorged. On Oct. 12th he had convergent strabismus and diplopia; left external rectus paralyzed; left pupil irregular in outline. He died Oct. 15th.

Autopsy.—Abscess found in the anterior part of the left hemisphere of the cerebellum about the size of an English walnut. Groove for lateral sinus (left) filled by plastic phlebitis for about distance of an inch above and below the abscess. Interior of petrous bone filled with inspissated pus. BACON.

119. Notes read before West London Medico-Chirurgical Society by BALLANCE: Boy, aged fifteen years; otorrhœa from left ear nine years; for five weeks headache, staggering, vertigo, vomiting, and nystagmus, subnormal temperature. At operation half an ounce of pus evacuated from anterior part of left lateral cerebellar lobe;

blood-clot subsequently formed in site of abscess with return of symptoms ; complete recovery on removal of clot. CHEATLE.

120. In THOMAS's case the patient had suffered with purulent discharge from the right ear for several years. The antrum was opened and cleared out, but with no improvement in patient's condition. No optic neuritis, slight vomiting at commencement of illness ; temperature raised throughout ; an abscess suspected, but patient too ill for further operation. An abscess in right lobe of cerebellum found at the post-mortem ; posterior surface of petrous bone carious. CHEATLE.

121. MURRAY first gives the after-history of a case of cerebral abscess operated on by him and reported in the *British Medical Journal* of Feb. 13, 1892. Patient had regained power in arm and leg, and remained in good bodily and mental vigor ever since. Of the two others, the first is a case of abscess in temporo-sphenoidal lobe following acute otitis ; the second, one of cerebellar abscess. An abstract of these cases was published in these ARCHIVES, vol. xxiv., page 115. CHEATLE.

122. Notes of case read by EVANS before Kidderminster Medical Society: Girl aged sixteen years ; otorrhœa for two or three years from right ear. One month before being seen by Evans had a fit, insensible for two or three hours, with twitching of left side of face, left arm and leg; headache worse after fit; strangeness of manner for two years. Right internal strabismus since fit, and complaint of "seeing double" with right eye, and great pain in frontal region, and shooting pains down right arm, and occasionally down left. Optic neuritis both sides. Plantar and knee reflexes absent. Temperature normal, pulse 72. Vomiting came on, pain increased, loss of power in left arm, delusions, patient finally becoming semi-comatose. Trephined over right temporo-sphenoidal lobe; on directing aspirating needle well forward; 3½ ounces of fetid, oily pus evacuated. Death four days after. *Post-mortem:* Abscess size of hen's egg in right frontal lobe, with well-defined wall ⅛ of an inch in thickness.

CHEATLE.

123. JOEL's first case was that of a youth, eighteen years old, who was said to have suffered from otorrhœa and mastoiditis which lasted for only three weeks. Chiselling revealed no disease of the bone adjoining the dura. Nevertheless the wound did not heal, and three months later a second operation was performed, by which a sequestrum extending down to the dura was

removed. The increase in the symptoms (headache, vertigo, retardation of the pulse, and ultimately choked disc) necessitated the performance of a third operation, by which an abscess in the temporal lobe was evacuated. Recovery. The second case, a boy of eleven years, had for years suffered from fetid otorrhœa with a perforation of Shrapnell's membrane. Removal of the malleus, which was carious, did not reveal any disease of the attic. After some weeks sudden aggravation of the symptoms, with the development of vomiting, unconsciousness, and attacks of convulsions. Operation showed the bones and the dura adjoining them to be sound, but there was increased intracranial pressure. Repeated incisions into the brain made with a narrow bistoury did not reveal the presence of any abscess. Nevertheless the symptoms disappeared, and the boy got well. The author assumes that this was a case of leptomeningitis. NOLTENIUS.

124. REINHARD goes into an extensive discussion of the pathogenesis of sinus-thrombosis, and then describes two cases presenting very serious symptoms, and relieved by operation. One of these he had already presented at the Congress at Bonn. In the first of the two cases, an offensive collection of pus was found in the cavities of the middle ear and mastoid, without anything to point to the existence of a secondary disease of the brain. But as all the symptoms persisted, a second operation was performed which disclosed a discolored and non-pulsating dura, and behind this an abscess of the sinus, bounded at either end by purulent thrombi. Removal with the application of a tampon of iodoform gauze. The second case showed, besides the original focus of inflammation, multiple defects in the bone due to caries, and defects in the wall of the sinus. The abscess in the sinus had already undergone evacuation externally, and was shut in above and below by thrombi. As the pyæmic symptoms continued, the jugular was ligated at a second sitting, and, as suspicious symptoms also had developed in the other ear, which had hitherto been sound, this also was operated upon. Nothing, however, was found in the latter. Both cases were ultimately discharged cured with the ear free from discharge, and with a persistent retro-auricular fistula. Mention is also made of a third case treated with similar success.
ZIMMERMANN.

125. MORTON ligatured the internal jugular vein, but death occurred from general peritonitis, due to ruptured pyæmic abscess of spleen. CHEATLE.

126. In DEANESLY's case, a child of four years, after scarlet fever, followed by double otorrhœa, developed an abscess over the left mastoid region, and all the sympoms of pyæmia; the left internal jugular vein was ligatured, and the sinus explored, but found healthy, bleeding freely on incision. No rigors or vomiting after operation, but the patient died of exhaustion.

CHEATLE.

127. FRIEDENWALD's patient, aged four years, first came under observation Oct., 1890, suffering with chronic suppurative otitis media of the left side. Sixteen months previously she had scarlatina and diphtheria, and the left ear had discharged constantly since then. An examination showed the presence of pus in the auditory canal, and a large polypus. The polypus and a piece of bone were removed. The patient soon afterwards had a chill, followed by a temperature of 103.6° F. As symptoms of retention of pus were well marked, an operation was performed Nov. 7, 1890, and a deep-seated abscess in the mastoid process was found. The walls of the same were scraped. The polypus returned, the otorrhœa persisted, and there was evidence of caries in the middle ear. Küster's operation was performed April, 1892, and a carious cavity exposed and scraped as thoroughly as possible. No sequestrum was found. The otorrhœa recurred and continued in spite of daily irrigations, etc., and removal of polypi until May, 1894, when a sequestrum found its way into the auditory canal, and when removed, consisted of a portion of a semi-circular canal, being 7 *mm* long, 2½ *mm* wide, and 3 *mm* in thickness. BACON.

128. GOLDSTEIN reports a case of a boy, six and one half years old, who three years previously had measles, from which he recovered without any aural complication. One year later, he had an intense earache lasting several days, followed by a copious discharge, which was present when he first came under observation. The auditory canal became closed, and swelling behind the auricle developed. The abscess was opened and 1½ ounces of green fetid pus evacuated. A sinus was discovered leading to extensively carious bone. Facial paralysis followed. An operation was performed, consisting of a free incision behind the auricle, which revealed considerable carious bone. Granulations, etc. were removed, and antiseptic dressings applied. For the following three months, the wound was kept clean and the dressings changed. A sequestrum was finally removed 36 *mm* in length,

18 *mm* in breadth, which included the cochlea and the deep structures. At various times subsequently, other sequestra came away. The sputum contained tubercle bacilli, and a diagnosis of miliary tuberculosis was made. The patient died. An examination of the temporal bone showed an extensive necrosed area.

BACON.

129. At a meeting of the Royal Academy of Medicine in Ireland, STORY related a case of sarcoma of the middle ear, the first he had seen in eighteen years among 12,000 aural cases. A polypus recurred again and again, the patient dying, in six months after the first removal, with a secondary growth in neck.

CHEATLE.

INTERNAL EAR.

130. SHIRMUNSKY, M. CH. Pilocarpine in diseases of the middle ear and the labyrinth. *Monatsschr. f. Ohrenheilk.*, No. 2, 1895.

131. DALBY, W. B. Hysterical (so-called) and functional deafness. *Br. Med. Journ.*, March 16, 1895.

132. MACKENZIE, H. A case of hysterical deafness. *Ib.*, March 16, 1895.

133. VAN DYCK, W. T. Hysterical deafness. A case. *Ib.*, May 4, 1895.

134. RANSOM, W. B. A case of functional deaf-mutism. *Ib.*, March 2, 1895.

135. MÉNIÈRE. A case of complete deafness occurring in the course of leucocythæmia. *Bull. et mém. de la soc. de laryng., d'otol.*, etc. Paris, Jan., 1895.

136. GRADENIGO, J. Acquired partial deafness for tones. *Intern. klin. Rundschau*, No. 44, 1894.

137. GRUBER, J. Upon morbus Menieri. *Monatsschr. f. Ohrenheilk.*, No. 6, 1895.

130. SHIRMUNSKY has seen good results from injections of pilocarpine in some recent cases of labyrinthine disease; but in old cases and in sclerosis the remedy was of no service.

KILLIAN.

131. After recording the case of a lady aged seventeen years who suddenly lost and suddenly regained hearing without cause, DALBY objects to the term hysterical, as, in the case of a special sense, like hearing, a patient cannot be under the impression that

she or he does not hear, the function being involuntary, in contradistinction to the hysterical paralysis of a limb; and as the function is perfectly performed, it is inaccurate to speak of "functional deafness." He then gives examples of true functional deafness due to violent emotional influences, etc., and then states that these latter cases help to show that there can be no true hysterical loss of hearing any more than there can be a hysterical loss of smell or of any other special sense. CHEATLE.

132. Notes read before the Medical Society of London by MACKENZIE of a girl, aged sixteen years. In January, 1892, slight attack of influenza, followed by earache in left ear; was politzerized, which caused sharp pain, followed immediately by deafness. Left ear discharged green fluid for a few days. Later, loss of power in limbs, and anæsthesia below neck came on. In March, 1893, Weir-Mitchell's treatment. Gained in weight, but no improvement in hearing. Use of limbs gradually regained. After two years, complete deafness in right and almost complete deafness in left; gradually regained hearing under Gilles's treatment.
CHEATLE.

133. VAN DYCK's case of hysterical deafness was that of a boy, age nineteen years, who lost his hearing and speech in three days, recovery occurring suddenly. History of self-abuse and a previous attack 14 months before. CHEATLE.

134. RANSOM relates a case of a male, aged nineteen years, who woke up one morning completely deaf and dumb; perfectly rational, communicating with friends by means of a slate. A year previously, had suddenly lost power of right arm for three weeks. No starting when loudest noise made unexpectedly behind back, but seemed occasionally to comprehend simple orders made before his face, such as a doctor might be expected to give. Anæsthesia of soft palate and loss of palate reflex noticed. At end of fortnight faradic current applied to larynx; speech and hearing returning immediately. CHEATLE.

135. In MÉNIÈRE's case—that of a lady aged forty-three, who was suffering from a severe form of leucocythæmia—vertigo, tinnitus, and vomiting set in during a remission of the symptoms of the main disease. The right ear became deaf in a few days, and the hearing in the left grew worse gradually. No changes, either old or recent, were found on either side. The author mentions the case on account of its rarity and also because it serves to emphasize the views he holds in opposition to other

writers, that in his cases of Ménière's disease abnormalities are never found in the middle ear. ZIMMERMANN.

136. In one of GRADENIGO's cases the partial deafness for tones was congenital; in the second there was a neuritis of the auditory nerve possibly as the result of an intracranial gumma; in the third there was probably a traumatic hemorrhage into the cochlea. POLLAK.

137. According to GRUBER the name Ménière's disease should be applied only to primary affections of the labyrinth associated with vertigo, subjective auditory sensations, and deafness. The only condition requiring to be differentiated from it would be labyrinthitis. Gruber also points out that it is possible that changes in the aquæductus vestibuli and recessus Cotugni may produce Ménière's symptoms. KILLIAN.

NASO-PHARYNX.

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143. MAYER, EMIL. An unusual manifestation of hereditary syphilis. *N. Y. Eye and Ear Infirmary Reports*, Jan., 1895.

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147. MEYJES, W. P. Upon nasal stenosis and its treatment. Amsterdam, 1894.

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159. WRIGHT, JONATHAN. An osteo-sarcoma in the nose of an ox. *Med. Record*, April 20, 1895.

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193. **Chervin.** Stammering and other defects of pronunciation. Paris.

194. **Caillé, August.** Diphtheria and croup after tonsillotomy. Report of a case, with suggestions for the prevention of similar severe complications. *N. Y. med. Wochenschr.*, March, 1895.

138. In childhood, adenoids and congenital atresia interfere with nursing; foreign bodies give rise to wounds in mouth and pharynx, or are swallowed. Deflection of the septum is then not due to injury, but to errors in development or to the effects of occlusion. The frequent coincidence of adenoids and phimosis leads **Allen** to believe in their connection. Finally, belonging to this period, a case of ozænic odor is reported in an infant, due to crust-like exudation between the perpendicular plate and the lateral mass

of the ethmoid bone, which disappeared after removal. In youth, as the effect of prolonged strain, there appear vascular hypertrophies of the nasal mucous membranes, and post-nasal catarrh, associated with epistaxis. In young men, otherwise normal, congested mucous membranes with excess of secretion are frequently found, but never after the age of twenty-five years. In the transition of the treble voice the "break" is frequently unduly prolonged, and this defect in speaking may be due to slight catarrhal irritation, or be fundamental on account of asymmetry in the thyroid cartilage and hyoid bone.

In middle life and old age the basilingual lymphoid bodies and associated veins or swelling of the submaxillary and salivary glands may produce excessive flow of mucus. Asthma is then more dependent upon disturbances of the chest than upon that of the nose. Gouty conditions of the nose and throat, with a neurotic element, and vasomotor reflexes due to the menopause, are now observed. As to sex, the female suffers from aphonia, due to functional disturbances and pharyngitis from uterine and ovarian reflexes. Diseases of the pelvic organs may be maintained by the presence of a primary disease in the throat or nose.

What Allen terms incipient Basedow's disease was observed in several females as a condition wavering between chlorosis and hysteria, with a history of shock, and with throbbing of the carotid arteries, associated with enlargement of the thyroid body. At this period, nodules at the base of the tongue are frequently seen. Allen observed three cases of sclerosis of the tonsils in married women.

Morphological factors in the female sex are asymmetry of the middle turbinated bones and smaller development of the frontal sinus. Three cases of empyema of the frontal sinus were associated with empyema of the maxillary antrum. In four cases of atrophic rhinitis in young children, associated with defective development of the skull, three were in girls. Hyperostosis of the line of the inter-maxillary suture (torus palatinus) is common in women.

TOEPLITZ.

139. Three of the five cases reported by MARTIN are of real interest. Case 1 was an *angioma of the naso-pharynx*, observed in a female, aged forty, which filled the right side of the cavity; it was pulsating, and attached to the right lower turbinated body. No operation. Case 4 presented a *split septum*, an exudate filling the intervening space between the two plates. It was produced by a fall from a bicycle upon the face, probably by direct force upon

the bridge of the nose. Pressure approximated the plates and led to complete recovery. Case 5 exhibited an *angio-neurotic œdema* of the eye and left side of the face, due to the use of applications to the nose. TOEPLITZ.

140. SCHECH discusses at length first the physiological function of the nose for breathing, and then the causes and results of mouth-breathing, as far as we have any fixed ideas in regard to them. The following are given as among the results of mouth-breathing: Predisposition to catarrhal affections of the air-passages; changes in the soft parts and skeleton of the face, with their consequences for speech; malformations in the nose, such as obliquity of the septum and general stenosis; flat, narrow thorax; manifold subjective troubles, especially headache, which is so frequent; mental and psychical depression; and other more or less problematical consequences. MÜLLER.

141. ZIEM's conclusions agree in the main with those of Heller (see No. 185). He also believes that the significance of the upper air-passages as a means of transmitting contagion has been decidedly under-estimated. He speaks of Hebra's view, now generally adopted, that the original site of measles is in the nasal mucous membrane. The frequency with which scarlet fever produces coryza is also considered. But the point that he goes most deeply into is the relationship of diphtheria to nasal disease, his citations from literature, and his own observations tending to prove that diphtheria frequently finds access to the system by way of the nose, and that the maintenance of the nasal mucous membrane in a healthy condition removes one of the most important predisposing causes of this disease. In like manner he considers the relationship between nasal diseases and influenza, malarial fever, typhus and typhoid fevers, yellow fever, the plague, meningitis, mumps, erysipelas, septicæmia, whooping cough, pulmonary phthisis, glanders, and granular conjunctivitis. His views, he says, agree with those of Harke, which are based upon numerous autopsies, and which assert that extensive and serious disease of the nose and accessory cavities occur in most infectious disorders, especially in children. The recognition of these diseases during life—and this constitutes the main point of Ziem's argument—is effected by the use of the test-injections that he recommended, and which are made with 1 per cent. salt solutions, best applied by means of a Zöllner force-pump. The same injections, furthermore, in conjunction with the application of

general hygienic principles, constitute the best prophylactic against almost all infectious diseases. As a curative measure, too, they are, according to him, extremely valuable in influenza and diphtheria, and, indeed, in severe cases of the latter, are indispensable, tending to prevent implication of the eyes and ears, and probably of the brain also. He is disposed to deny the value of Behring's serum in diphtheria. Müller.

142. Fournier has observed five cases of chancre of the nares. Infection was produced either by the finger or sometimes by surgical instruments. As regards seat, chancres are to be distinguished into those of the introitus narium and those of the mucous membrane proper. In the former, the submaxillary glands are involved ; in the latter, the glands beneath the sterno-cleido-mastoid. The beginning of the disease is almost always unnoticed. This condition must be differentiated from impetigo, and especially from erysipelas.

143. Mayer distinguishes the congenital syphilis occurring before the fourth month after birth from the hereditary occurring many years after. He reports two cases of mother and child, the former with acquired tertiary, the latter with inherited tertiary, syphilis. The mother, aged twenty-seven, presented nasal obstruction on the right side, which was dated only a month back. She had several miscarriages, but the daughter above referred to was apparently healthy when born. The nasal obstruction was due to a hemispherical mass, ¾ of an inch wide, filling the anterior nasal space, which microscopically was a gumma. A few days after removal an abscess of the septum was opened. Complete recovery took place.

Her daughter, aged seven, suffered at first from a severe interstitial keratitis. Three months later, when the mother's disease had subsided, she appeared with an ulcer over the nasal bone on the left side, ¾ of an inch in diameter, which, when probed, revealed necrosed bone. After curetting, treatment was interrupted for four months, when, in place of the former ulcer, a deep cavity was seen, ⅛ inch in diameter, extending over the median line and down ½ inch to the nasal orifice. The hard palate, the inguinal region, and the tibia, all presented ulcers on the left side. After treatment with irrigations, the anterior surface of septum was found to be superficially ulcerated, and below an annular destruction of the septum, with an orifice of ½ inch in diameter, was present. The tip of a rubber catheter was inserted to prevent retraction, and under energetic local and general treatment the ulcers all healed, leaving a decided depression externally, with but slight disfigurement, perforation of septum, and cicatricial adhesion between the lower inferior turbinated body and septum, with free breathing capacity.

A complete review of the opinions of other authors on similar cases are given in conclusion. TOEPLITZ.

144. In LOEB's case, a female aged thirty, the anterior nares, which had been contracted to the size of a broom straw, were opened with the knife, whereupon the mucous membrane was stitched to the outer skin. The opening was kept apart by rubber tubes of the shape of Simrock's speculum, consisting of a short cylindrical tube with curved margin filling the introitus narium, which were permanently worn for three months with good final result. TOEPLITZ.

145. In both of HOPMANN's cases there was narrowing of one side of the nasal cavity, the narrowing increasing from before backwards until in one case there was complete atresia, with the presence of a bony partition of considerable thickness and hardness, while in the other case the canal was reduced to a narrow chink, which was closed in by a membrane. In both, the occlusion was probably congenital. In the first case, empyema of the maxillary antrum and polypi developed in the side that was occluded. By an operation with chisel and galvano-cautery he was able to restore nasal respiration in both cases. Casts of the choanæ revealed marked asymmetry in both instances. ZARNIKO.

146. SPIESS's paper really deals, not with the operation for deflections of the septum, but with that for thickenings of the latter. He uses a variety of instruments, which are set in motion by a very rapidly revolving electromotor (making 3600 revolutions a minute). The power is transmitted from the motor to the instruments by means of the spiral wire of the dental engine. The instruments are either trephines, drills, and burs, which resemble the corresponding dental instruments, or saws. The latter are attached to a special form of handle which converts the rotating movement of the spiral into a to-and-fro motion. Spiess ascribes to his procedure the advantages of great rapidity and of freedom from pain. For instance, he can in five seconds bore out a piece 3 *cm* long; and thus in a short time he makes a number of holes one after another until the whole prominence is drilled away. Furthermore, opening of the maxillary antrum from the

inferior meatus or from the alveolar process is very easily done by means of his trephines and drills. If a sound is attached to the handle designed for one of the saws, massage of the mucous membrane can readily be performed ; and massage of the larynx can be done in a similar fashion by substituting Ewer's concussor. ZARNIKO.

147. MEYJES, in an essay written particularly for those who are not specialists, gives in a condensed form a view of the main causes of nasal stenosis. In deviation of the septum in adults he does not scruple to produce a perforation by sawing away the obstructing cartilage. He is likewise indifferent about saving the periosteum. A deviation to the left he found in about two hundred out of a total of three hundred skulls that he examined in the Amsterdam Anatomical Museum. Rhinitis caseosa, which, according to Meyjes, is a disease *sui generis*, was in two cases the cause of the obstruction. Of malignant tumors he found sarcoma in four cases with more or less pronounced metastases in the cervical region, and once he found a typical naso-pharyngeal polyp. In general he prefers the application of chromic acid to the galvano-cautery. He agrees with Hartmann that the so-called posterior extremities are more frequently the cause of stenosis and of deafness. The advantages of making an inspection or examination with sounds in obstinate catarrhs of young children is shown by some cases of the author's in which foreign bodies in the nose were found to be the cause of the condition. In one case both posterior rhinoscopy and laryngoscopy were rendered extremely difficult by the undue development of the two upper cervical vertebræ. By employing bougies of various sizes in the after-treatment of chronic hypertrophic rhinitis he has often been able to prevent relapses. He lays particular stress upon the treatment of constitutional affections, and of anæmia and constipation in women. He especially warns against the prolonged use of routine measures in place of proper local treatment seasonably applied. MEYJES.

148. The abnormities of the septum, discussed in this paper, are the spurs and ledges, and for their treatment a nasal saw has been devised by ANDERSON, which differs from the Curtis saw only in the shorter length of the cutting edge and in the roughened handle. TOEPLITZ.

149. Series of cases noticed by BRODIE and ROGERS of acute rhinitis among the Kaffirs employed in the mines, either causing

death in three or four days, or running a course of a month or two. In all, the one constant symptom was the livid, injected, and swollen state of the Schneiderian membrane. Meningitis and pneumonia found in those who died. Disease did not seem contagious. CHEATLE.

150. FELSENTHAL made a bacteriological examination of two cases of rhinitis fibrinosa in Baginsky's Polyclinic, and in one found no bacilli, in the other bacteria identical in shape with the Löffler bacillus, but less virulent for rabbits. His experience during recent years has inclined him more and more to the belief that this disease in most cases is only a variety of diphtheria, which has partially lost its virulence, but which may regain the latter under suitable conditions. Hence the importance of making bacteriological examinations in all cases of membranous disease of the nose. MÜLLER.

151. According to BEAUSOLEIL, rhinitis caseosa is not a disease *sui generis*, as many suppose, but may occur as a symptom of any kind of lesion of the nose—*e. g.*, deformation of the septum, hypertrophies of the mucous membrane, and foreign bodies. The products of secretion, derived from the nose or from its accessory cavities, and epithelia from the inflamed mucous membrane accumulate and then undergo putrid decomposition, due to the presence of a variety of micro-organisms. Among the latter is a filiform bacillus which is carefully described in Beausoleil's paper, and which occurs in such numbers as to form by itself considerable portions of the cheesy masses. The author criticises the observations that have hitherto been published, and justifies his own view by the histories of cases that he himself has observed. ZIMMERMANN.

152. VOHSEN says that in acute rhinitis in children gentle inflations of air into one nasal canal (the other remaining open) should be practised several times a day, especially just before meals. If necessary, the swelling should be reduced by cocaine before the inflation is done. In this way secretion is expelled out of the side that is left open. There need be no fear of producing infection of the middle ear, since the ostium tubæ, which in small children lies very deep, usually closes simultaneously with the palate. The mucous membrane itself is then treated with a 3 per cent. solution of boric acid in glycerin.

ZIMMERMANN.

153. HARTZELL reports the following case: A physician, aged

thirty-eight, had a mild follicular tonsillitis. On the third day after the attack an acute eczema appeared on chin, cheeks, forehead, palms of hands, thighs, and about the arms. Coincidently' the inner surface of the lips and the mucous membranes of the tongue and cheeks were covered with tiny, opaque vesicles, causing a burning sensation, and after rupture leaving extremely painful ulcers. A week later groups of minute vesicles appeared upon the bulbar conjunctiva. The nasal mucous membrane now also exhibited an eruption of vesicles, causing coryza. Pain then appeared in both knees. This was the third attack of eczema that the patient had had, the buccal mucous membrane being the only one affected in the second attack. While some observers deny the occurrence of eczema of mucous membranes, which is certainly very uncommon, Hartzell believes that even the bronchial, gastric, or enteric mucous membranes may be the seat of eczematous inflammation. The treatment consists in the application of cocaine, of one-per-cent solutions of resorcin, boric acid solutions, and ointment of carbolic acid of a strength of one per cent. In eczematous conjunctivitis weak ointments of ichthyol are, according to von Sehlen, extremely useful.

TOEPLITZ.

154. LÖWENBERG repeats the description of the bacillus of ozæna which he gave in 1880 and 1881. It forms two kinds of colonies in gelatin-cultures: one, more rarely found, is small, round, yellowish, compact-looking, and embedded in the gelatin-mass, the other is larger, semi-transparent, more or less milky, and superficially situated. Neither kind liquefies gelatin. The cultures usually exhale an odor which is not unpleasant. The microbes of ozæna and pneumonia are very similar, but differ in the appearance of the colonies and in the odor. White mice die within twenty hours after the subcutaneous injection of a culture of the ozæna bacilli. Guinea-pigs stand injections beneath the skin, but are killed by intra-peritoneal injections; and the former do not render the animal immune against the latter. The majority of rabbits, too, are killed by the injections, but in one case immunity was produced. The bacilli die at 54° C., so that by raising the temperature of the culture-liquids to this point, the toxines alone will be left to exert an action. With the latter it was possible to render a mouse immune. The serum of a rabbit which had been rendered immune served to make another so, although it lost this property in a short time. Immunity against

Friedländer's pneumonia bacillus is no guaranty for immunity against the ozæna bacillus, nor is inoculation with the latter a protection against the former. BARTH.

155. WINGRAVE defines turbinal varix "as a particular form of hypertrophy which involves the posterior half of the inferior turbinal body, and is characterized by a permanent distension of the venous sinuses." In his paper the disease is fully described from all points; he advises removal by means of Carmalt Jones's improved ring-knife. CHEATLE.

156. RÉTHI examined a bleeding polyp removed from the septum and concludes that this form of growth, as well as polypoid hypertrophies in other spots, depend upon chronic catarrhal processes, and that there is no justification, either upon etiological or histological grounds, for making a distinct category of these tumors.

157. BIEHL describes two cases in which growths that had been removed turned out to be cavernous angiomata. The striking feature in both cases was the marked proliferation of the endothelium, such as ordinarily occurs in angiomata of the liver. The so-called bleeding polypi of the septum are a very different kind of growth as far as their pathological anatomy is concerned. KILLIAN.

158. At the Laryngological Society of London, BABER showed a patient who had a definite papillomatous tumor with a broad base, growing from the floor and septum of the nose. CHEATLE.

159. The ox examined by WRIGHT could not breathe through the nose. The nasal cavities were filled with an irregularly rounded tumor which measured 24 *cm* in its longest, 12.5 *cm* in its shortest diameter. It was attached to the inner surface of the external wall of the left antrum about 10 *cm* below the orbit, causing exophthalmus and destruction of the structures of the left side, and it had grown across through the septum into the right antrum, which was partly filled, while the left antrum was almost entirely obliterated. Three fourths of the mass was composed of cancellous bone tissue, the soft and external portions being irregularly lobular, with their capsule adherent to the bony wall of the nasal cavities, and containing also some cysts. The microscopical examination revealed the tumor to be composed of fibrous tissue, infiltrated with small, spindle-shaped cells, areas of œdema, the surface covered with cylindrical epithelium. The growth was probably the result of beating the animal over the nose. TOEPLITZ.

160. BERGEAT, after pointing out the advantages of removing sequestra from the nose as early as possible and the failure of the mechanical measures hitherto used, describes the experiments that he has made with regard to the effects produced by different acids upon pieces of bone, sequestra, and rhinoliths. He found that non-rectified hydrochloric acid is by far the best for the purpose. The acid is applied on a sound, the attempt being made to channel out furrows with it so that the sequestrum can be broken. The softened layer of bone is scraped away after each application. The author describes a case of syphilitic sequestrum, in which rapid diminution was effected by this means. The application of acids is also, he holds, indicated for such rhinoliths as have to be removed by disintegration. He also mentions a case in which a rhinolith was formed about a cherry-pit, and was removed with the forceps. MÜLLER.

161. BLACK reduces hypertrophies and engorgements of the lower turbinated bodies only, by removing a circular portion, which is 2½ inches in length, along their entire extent by means of the nasal trephine. He claims that there is less damage done to the parts by this operation than by any other procedure.

TOEPLITZ.

162. From his experience gained in epidemics of grippe during the last few years, DELAVAN arrives at the conclusion that the nose should not be surgically interfered with during such epidemics, since the operations will then be followed by an acute attack of influenza, and its results are apt to be disastrous. This is also true of hay-fever, and operations performed for it should be done long enough before the expected attack for the parts to become fully healed. TOEPLITZ.

163. Since 1885 SHAH has performed 228 rhinoplastic operations. In the great majority the nose had been criminally mutilated, women being the usual victims. The Indian or forehead flap method is by far the best for repairing the nose; other methods are discussed, with their advantages under certain circumstances.

CHEATLE.

164. At the Medical Society of London, BLOXAM showed a man whose nose had been destroyed by syphilis; a new one having been formed from the stiff and useless middle finger of the left hand. The finger having been trimmed was applied to the face, the arm being supported by plaster of Paris; on union taking place the finger was detached from the hand. Alæ subsequently formed from the cheeks. CHEATLE.

165. The union of the two camphors, menthol and camphor, results in a fluid of the formula $C_{10}\ H_{18}\ O$, which, according to BISHOP, has proved most efficacious in coryza, hay-fever, intumescent rhinitis, hypertrophic rhinitis, simple sore-throat, acute laryngitis, tracheitis, bronchitis, and cauterizations to prevent hemorrhage and inflammation. It is used for home treatment in solutions of three per cent. in lanolin, in sensitive persons with hay-fever in weaker solutions, and after galvano-cauterizations by gently packing the nostril with a pledget impregnated with a 20 per cent. solution, which is also used to stimulate secretions in atrophic rhinitis. TOEPLITZ.

166. WROBLEWSKI speaks highly of the following solution for producing anæsthesia in operations upon the nose. Antipyrine, 2 parts, cocaine hydrochloride, 1 part, and distilled water, 10 parts. The author also says that he has seen anæsthesia lasting for ten hours produced in parts that were to be operated upon (larynx, palatal tonsil, lingual tonsil) by the parenchymatous injection of a 50 per cent. solution of antipyrine. No bad results were produced in any case. ZARNIKO.

167. HEDERICH reports in regard to ferripyrine, a double compound of antipyrine and ferric chloride. This compound is used like ferric chloride, over which it has the advantage that it does not produce cauterant effects even on prolonged application, and its hæmostatic action is nevertheless considerable.

MÜLLER.

168. BERENS has treated 78 cases of rhinitis atrophicans with pure ichthyol at the clinic and with a ten per cent. ointment to be used at home. Fifteen cases were not improved. He considers ichthyol curative in chronic atrophic rhinitis (ozæna) and in laryngeal tuberculosis. It excites secretion, is a deodorizer, an absorbent, and a local anodyne. TOEPLITZ.

169. In order to allow the remedies to remain in contact with the mucous linings for a long period, tenacious solutions should be applied. CHAPPELL uses a combination of zinc ointment and sterilized castor oil with hydro-carbon oil, in the proportion of from half a drachm to two drachms of the zinc and castor oil to one ounce of hydro-carbon oil. This so-called oleum hydro-carbon compound is the base of sprays or solutions, to which other drugs, such as boric acid, camphor-menthol, cocaine, etc., may be added, as the case requires. TOEPLITZ.

170. GLEITSMANN advocates the use of the galvano-cautery

snare for the removal of nasal polypi, refuting the charges made by P. Heymann against it. For the snare he uses platinum-iridium wire. Furthermore, he again advocates the use of trichloracetic acid after galvano-cauterization of the nose, adopting Moritz Schmicht's suggestion of using a weak boro-cocaine spray (1:500:1000) after the cauterization. Bleeding produced by the cautery favors reaction in the majority of cases, preventing the formation of a dry eschar. TOEPLITZ.

171. MINK, taking as his text several cases of inflammation of the ear that he himself observed, warns against the routine practice of making injections through the nose and especially against the practice of snuffing up the injections. He removes the crusts by means of an atomizer introduced into the naso-pharynx and by a probang armed with cotton. In children he removes masses of mucus by means of Politzer inflation. MEYJES.

172. ENGELMANN, following Zuckerkandl, groups under the title of catarrh of the frontal sinus all the diffuse inflammations of the mucous membrane of the latter, including mucous, muco-purulent, and phlegmonous inflammation (sinuitis frontalis serosa, seropurulenta, et phlegmonosa). He bases his description upon 15 cases which he observed in Killian's clinic, and compares his results with the statements given by other authors, which he has culled with noteworthy industry from literature. It is impossible in a short abstract to give all the new points that the author has added to our knowledge of the subject, but the following may be mentioned. He considers that in about 50 per cent. of the cases the sound can be passed from the middle meatus into the frontal sinus. To do this, however, it is frequently necessary to remove the main obstacle in the path of the sound, which is the operculum of the middle turbinated. To effect this "Killian carries the blade of a slender pair of nasal scissors upwards and backwards through the fissura opercularis and makes an incision close to the attachment of the operculum; then passes a snare round the operculum up to the upper end of the incision and snares the whole mass off." The danger of Scähffer's method of entering the sinus from the region between the middle turbinated and the septum is satisfactorily demonstrated. Killian's method of opening the sinus from the outside is described in detail. Killian enters the cavity in the ordinary way, scrapes it out, and then passes a sound into the naso-frontal duct. He then separates the nasal bone from the frontal bone with the chisel, turns back the

latter together with periosteum and a fold of skin, and chisels down upon the sound, thus opening into some of the ethmoid cells. In this way, after the nasal bone has been replaced and the lower end of the wound has been stitched up, a wide canal is left between the frontal sinus and nasal cavity, through which the former can be treated and its condition observed after the cutaneous wound has closed. As far as 3 observations will admit of our judging, the results of the method are favorable. On the whole the results obtained from treatment in the cases described are not brilliant: 3 cases of acute catarrh got well spontaneously; of 10 chronic cases, 2 were cured and 1 was improved by operation, and the rest passed from observation. The paper concludes with a table in which are collected the results of operations in 120 cases gathered from literature, and with a detailed bibliography.

ZARNIKO.

173. After considering the difficulties which face us in making an accurate diagnosis of empyema of the frontal sinus, HERZFELD describes his method of operating, which may be summed up as follows: opening the sinus from the outside, removal of all diseased material, and, if necessary, dilatation of the natural passage into the nose by means of a specially devised instrument, which is figured in the paper. The author rightly condemns the operation of making a forcible entry into the sinus from the nose. Three histories of cases complete the article.

NOLTENIUS.

174. After some descriptive remarks upon the anatomy and physiology of the accessory sinuses, MYLES classifies the pyogenic conditions by separating those of the antrum from those of the other three sinuses. The inflammatory diseases of the antrum Highmori, again, are divided as regards cause, into those of dental and nasal origin, their relative frequency being demonstrated by 19 cases, among which 2 were directly, 2 indirectly, and 4 probably caused by the teeth, whilst 10, including 2 of the dental cases, presented polypi, and 1 was due to acute cold. In 8 the ethmoid and in 4 the frontal sinuses were implicated. In ethmoidal, frontal, and sphenoidal-cell disease, polypi were the cause in 7 out of 10 cases. For diagnosis, Myles used transillumination with much advantage, preferring a bank of parallel lamps, covered with a black cloth, aggregating sixty-six-candle power, and a four-candle power lamp in the mouth; by changing the candle power in the bank, any power can

be used in the mouth. Unilateral umbræ indicated, with but one exception, a diseased antrum. He also washes the cavity through the natural openings or through a trocar, or uses the change of the head's position for diagnostic purposes. Myles advocates the early use of surgical measures for the removal of the pathological conditions. He prefers the opening of the antrum from the alveolus or canine fossa by means of the electric drill, and subsequent scraping with blunt and sharp curettes. Washing through the natural opening has also relieved, though not radically cured, the disease, but opening by Mikulicz's method from the lower nasal meatus has been unsatisfactory. The latter method yielded better results when carried out by sawing away the anterior end of the inferior turbinated bone, then clipping off a portion of its attachment to the superior maxilla, and subsequent passing the electric drill into the antrum ; curetting from this opening is difficult. Solutions of boric and carbolic acids and peroxide of hydrogen are best suited for after-treatment. In cases of ethmoidal or sphenoidal-cell disease, the floor is perforated by a small drill, after removal of the middle turbinated body, and curettes are valuable. In frontal-sinus disease, when an external operation is refused, an opening is made through the anterior ethmoidal cells along the infundibulum, by clipping, drilling, or curetting, thus removing a part of the nasal process of the superior maxilla whereby the severe headaches are greatly relieved. The paper concludes with a full report of twenty-four cases. TOEPLITZ.

175. STARR reports 4 cases of acute inflammation of the frontal sinus, in patients aged from twenty-three to thirty-one, 2 of which followed a cold after seven and nine days respectively, the 2 others developing ten days after influenza. Pain over the eyebrows, gradually increasing, with evacuation of discharge at intervals, were the most prominent symptoms. The infundibulum was patent in all cases. Tenderness on pressure over the sinus and also over the pulley of the superior oblique muscle was quite marked. Mustard applications rapidly relieved the pain. Complete recovery took place in five, three, seven, and eight days, respectively. TOEPLITZ.

176. In SYMONDS's case, which he showed at the Laryngological Society of London, the patient had suffered with foul discharge from the left nostril for seven years and from the right for three years. The maxillary antrum was opened on each side, evac-

uating thick, foul pus; later, a swelling appeared in the centre of the forehead, just above the nose. On incising the swelling, foul pus escaped, and an opening was found in the bone a little to the left of the median line, leading into the frontal sinus; a curved probe was passed into nose and a piece of gum elastic bougie introduced, this being replaced later by a small silver cannula.

CHEATLE.

177. In NOLTENIUS's cases the maxillary antrum contained a clear yellow liquid, whose presence could be demonstrated by an exploratory puncture made from the nasal cavity. The subjective and objective symptoms were slight; usually a single aspiration with the syringe sufficed to produce a cure KILLIAN

178. MEYJES, in order to keep open the drill-hole made in the alveolar process, inserts into it a tube with a lid that shuts with a spring. No pus can then escape from the antrum into the mouth. The tube remains in situ, and irrigation of the antrum by the patient is a very easy matter for the patient. The tube, which is made of silver, or better of gold, is attached to the nearest molar tooth, or, in its absence, is provided with a palate-plate made by a dentist. MEYJES.

179. ZIEM demonstrates on two of Zuckerkandl's figures that in transillumination from the mouth light may pass from the nasal cavity in the region of the middle meatus into the orbit directly without traversing the maxillary antrum. He says that the absence of a subjective sensation of light when transillumination is done, is produced in many cases by undue thickness of the bony wall of the sinus, or perhaps by unusual pigmentation of the choroid, and that a subjective sensation of light may still be present even when there is a considerable collection of pus in the antrum.

KILLIAN.

180. GRÜNWALD's patient, a man twenty-four years of age, had suffered for two or three years from a fetid discharge from the nose with the formation of crusts. Condition improved by opening the maxillary antra and the ethmoidal labyrinth. But afterwards a fetid secretion again formed, the origin of which turned out to be the frontal sinuses. These were opened, and their posterior wall was found to be destroyed by caries, so that the dura, which was somewhat thickened and granular, lay quite exposed to view. A tampon was applied. Ten days later occipital headache set in. The dura was incised, and the surface of the brain was found to be discolored. Soon after the operation

the patient had attacks of coma and convulsions. The cranium about the carious aperture was at once chiselled away, and a superficial mass of inflammation of about the size of a pea was found. An exploratory puncture gave no results. Eight days after the operation fluctuation developed at the spot, and upon incision, a teaspoonful of non-fetid pus was evacuated. The pain disappeared at once, and seven weeks later the patient was discharged. MÜLLER.

181. SNELLEN thinks that in orbital inflammations in which none of the usual causes can be found, the adjoining sinuses should always be examined. Although he has found scarcely any cases of a disease of the sinuses with secondary inflammation of the orbit described in literature, he himself has met with such a case, of which he gives the history. Some cases of empyema of the frontal sinus which were operated upon with success are also reported. Simple distension of the wall of the sphenoidal sinus, according to the author, is sufficient to render the optic nerve atrophic by pressure upon it during its passage through the foramen ; but the nerve will be even more readily affected by inflammation of the wall of the sinus, lying as it does for about 1 *cm* of its extent in contact with the latter. MEYJES.

182. HOPKINS reports twelve cases of recurrence of adenoids after radical operation, taken from his own practice and that of others, from which he arrives at the conclusion that, in children, complete and early removal under an anæsthetic is to be urged upon, and that more attention is to be paid to the after-treatment and the hygienic conditions, especially to that of the sleeping-room. The exhaustive literary references collected by Hopkins do not throw much light upon the question of recurrence. TOEPLITZ.

183. EUSTACE SMITH is the first general physician of eminence who has written upon the importance of diagnosing and removing adenoid growths in children ; in his very interesting paper he describes the general as well as the special sense symptoms caused by them, drawing special attention to what has been termed "infantile respiratory spasm," or the croaking of new-born children, and also to the retraction of the chest-walls below the nipples, and depression of the ensiform cartilage in young children.

He advocates immediate removal if any symptoms are present, and careful watching if growths are present but cause no symptoms. CHEATLE.

184. **Hermet** was led to confine within narrower limits the indications for operating upon adenoids by a case in which the operation that he proposed was declined, and which he watched for years afterwards without being able to notice any ill effects. Out of a total of 103 cases he has had to operate upon only 14. Where there are no aural complications, headache, indisposition to work, or interference with development, he simply waits and has the patient carefully watched. If an otitis media sets in, he scrapes the adenoids out, and the otorrhœa gets well in a few days. The operation itself he regards as by no means free from danger, as, apart from the possibility of hemorrhage, there is the risk from the anæsthetic and the chance of producing meningitis.

ZIMMERMANN.

185. Starting from the assumption (1) that most, or, excepting cholera and dysentery, perhaps all, infectious diseases are inhalation diseases; (2) that their primary localization is in the nose and pharynx; (3) that they are localized there during the whole period of incubation; and (4) that the general infection takes its origin from this as a starting-point, **Heller** has become convinced that the Alpha and Omega of any treatment directed against an infectious disease must consist in a thorough irrigation of the naso-pharynx. The very first irrigation is usually followed by a marked fall of temperature, immediate euphoria, and a simultaneous improvement in the local symptoms. This good result is most apparent in facial erysipelas and angina, which are sometimes actually aborted; and the method wins no less triumph in diphtheria both of the fauces and larynx. In diphtheria, indeed, proper irrigation may obviate tracheotomy, as Heller has seen in a number of cases in which that operation seemed unavoidable; the so-called septic form of the disease, however, being an exception. Immediate good results with diminution in the number of paroxysms and shortening of the course were obtained in whooping cough. In scarlet fever and measles, irrigations are of great value not only for prophylaxis, but also for relieving the nasal obstruction and its consequences, such as difficult expectoration, torpor, headache, etc. Likewise amenable to this treatment are the glandular swellings pathognomonic of German measles, and in general all the so-called scrofulous glandular swellings, since they are often simply the result of naso-pharyngeal disease. In tuberculosis an essential improvement is produced in the expectoration, and the disease, in its inception,

may actually be eliminated. Typhoid fever, which Heller reckons as being also among the inhalation diseases, he combats with similar success, especially as regards such symptoms as headache and stupor; and the same remarks apply to acute articular rheumatism. Lastly the irrigations find application also in pneumonia and bronchitis (as a good expectorant), in eczema in children, and in typical and atypical neuralgiæ of the head. The irrigations, two or three of which a day are sufficient, are made with a simple rubber bulb having a pointed tip. The substance used is boiled water, the temperature of which is regulated according to the idiosyncrasy of the patient, the external temperature, and the height of the fever. The stream should be injected horizontally and should never be strong [*Cf.* No. 141]. MÜLLER.

186. Retro-nasal pharyngitis, although frequent, is but little known. VACHER distinguishes two forms, the simple chronic, and the granular. It is usually met with in children and, in the majority of cases, depends upon the general condition, which should, therefore, always be taken into account. For local treatment cauterization must be employed; massage also exerts a favorable action. The disease is dangerous only through complications affecting the Eustachian tubes and middle ear.

187. GRIFFIN describes the case of a girl, aged nineteen, who exhibited a slight congestion together with isolated grayish-white spots of the pharynx, without cough, or lesion of larynx and lungs, but with fever and tubercle bacilli in the sputum. The spots enlarged, ulcerated, and coalesced, and later on the lungs also became involved. Death ensued in four months. TOEPLITZ.

188. The difference between LIEVEN's and the ordinary methods of treating those severe and uncommon cases in which the arch of the palate and the velum palati are totally adherent to the pharyngeal wall consists mainly in the after-treatment. In the period immediately following the operation Lieven applies a tampon of gauze impregnated with europhene. This is changed two or three times in ten days. After that he uses a rubber ball, which is prolonged into a tube of the same material, and which is introduced into the naso-pharynx by means of a rubber catheter passed through the nose. The tubular extremity projects out in front of the nose, and through this the ball can be distended with air. During the first two or three weeks, this apparatus is inserted every day for four or five hours at a time, later for only two or three hours, and, after a time varying from two to three months, according to the tendency that the scar

shows to shrink, is applied only four or five times a week. The advantage that the bulb has over rigid forms of apparatus or over compact tampons consists in the greater energy of its distending action, the smaller amount of pain which it causes, and the comparative facility which it affords for treating patients who are going about. A favorable result can be anticipated in comparatively recent cases only. MÜLLER.

189. MACHELL'S patient, a girl aged ten, suffered for two years from an excessive enlargement of both tonsils, which literally filled the throat and consisted of numberless pedunculated masses. The patient died from diphtheria and scarlatina, and one tonsil was easily enucleated after death with the forefinger. Two photographs of the condition during life and of the specimen accompany the paper. The report of the microscopical examination is rather obscure. TOEPLITZ.

190. MARCEL removed the tonsils with the cold snare in fifty cases, and regards this method as indicated in timid children and when the tonsils are very large. POLLAK.

191. WHARTON'S patient, a child aged six, could neither swallow nor close the mouth on account of swelling of the tongue, more marked on the right side, which partly protruded and was coated with a thick membrane covering the dorsum, right lip, and inner surface of cheek. There were swollen glands, profuse salivation, sitting posture, and a temperature of 101° F. The membrane, easily stripped off, contained Klebs-Löffler bacilli, and the affection was cured by repeated incisions, which removed blood and serum only. TOEPLITZ.

192. The fact that in many instances of so-called globus hystericus enlargement of the lingual papillæ is the cause of the paræsthesia is exemplified by several cases reported by SIKKEL. The latter was able to relieve the patients of their symptoms by removing the papillæ with caustics. MEYJES.

193. True stammering is characterized by the fact that it begins in childhood, is dependent upon a typical respiratory movement, intermits at times, and disappears in singing. CHERVIN theorizes in regard to the treatment, and then describes the method devised by his father, and which consists of exercises performed three times a week and requiring to be continued by the patients themselves for a varying time after their discharge from the Institute. The last section of the article treats of cleft palate and its treatment by operation and prothetic apparatus.
ZIMMERMANN.

194. One day after a double tonsillotomy in a boy aged four, with adenoids, hypertrophied tonsils, and gingivitis, due to carious teeth, the stumps of both tonsils were found to have been covered with a thick pseudo-membrane, extending also over the anterior pillars, with swelling of the submaxillary glands, high fever, vomiting, etc. The cultures made from the membrane contained diphtheria bacilli and streptococci (mixed infection). On the following day croupous cough with laryngeal stenosis necessitated intubation. The patient recovered. CAILLÉ reiterated the prophylactic measures for diphtheria, recommended by him in 1888, on the ground that the micro-organisms in the nasopharynx and carious teeth are without danger until they are stirred up, as has been proven of late by the investigations of Chantemesse, Kurth, Dörnberger, and others, particularly Biggs and Park, who found diphtheria bacilli in the mouth of some patients as late as five weeks after recovery. Caillé, therefore, advises washings with solutions of salt or boric acid, as a safe prophylactic measure in persons exposed to infection from pertussis, measles, and scarlet fever, and before the removal of adenoids and tonsils. Carious teeth should be removed before operations upon adenoids and hypertrophied tonsils.

TOEPLITZ.

OBITUARY.

I.—**Dr. Wilhelm Meyer of Copenhagen.**—On June 17th, while returning from a pleasure trip, Dr. Wilhelm Meyer, honorary doctor of the medical faculty at Halle, died at Venice from cholera morbus.

The discoverer of adenoid vegetations and the author of the classical monograph on the same has erected to himself, by this scientific achievement alone, a monument, "*ære perennius*"!

May his memory always be honored! Moos.

II.—**Salomon Moos,** born July 15, 1831, at Randegg, a village in the Grand Duchy of Baden, died July 15, 1895. Educated by his worthy parents to take life serious, he rose by his own efforts from lowly circumstances to an eminent position. After receiving his earliest education in the elementary school of his birthplace, he attended the Israelitic grammar school at Müllheim, where he devoted himself principally to Hebrew literature, in which he made himself so proficient, that as a boy he received the title of *chaver* (associate). He then entered and attended, always in restricted circumstances, the whole course of the lyceum of Karlsruhe. He studied medicine in Heidelberg under Henle, Hasse, Moleschott, Chelius, and others, graduated in Heidelberg, passed his state examination in Karlsruhe, was assistant at the medical clinic of Professor Hasse for two years, went, to further perfect himself, to Prague and Vienna, began to practise in Heidelberg in 1856, and passed his examination as a lecturer (Privat-Docent) at the university in 1859. The title of his thesis was: "The Influence of the Occlusion of the Vena Portæ on the Formation of Sugar in the Liver."

Shortly afterward he married Miss Sophie Haas of Karlsruhe, with whom he lived most happy up to his death. From the year 1859 he devoted himself specially to the study of otology, in which he received the kindest assistance from Fried. Arnold, Professor of Anatomy, who was distinguished both by technical skill and scientific attainments. One day the professor told the young doctor: "You have selected the hardest bone of the human body." In his practical studies of otology, Moos enjoyed the ever-ready assistance of A. Politzer, with whom he remained in the most intimate friendly and scientific intercourse all his life. His anatomical labors induced him to translate the text-book of the English otologist, Toynbee, who was principally distinguished for his anatomico-pathological investigations. Thus he entered the current of modern otology, which at that time was so successfully cultivated in Germany by Tröltsch, Schwartze, and others. After publishing a number of articles in the *Archiv für Ohrenheilkunde*, and elsewhere, he made known the results of his studies and experiences in a text-book, *Clinic of Ear Disease*, Vienna, Braumüller, 1866. Judiciously using the incident literature, Moos presented an unusually clear picture of the status of otology of that time, showing that he had mastered the whole field, not only from books, but from personal experience.

In the ARCHIVES OF OPHTHALMOLOGY AND OTOLOGY, edited in the German and English languages since 1869 by Moos and the writer of these lines, he was at the head of the otological department of the German edition. When from the eighth volume each department of the ARCHIVES was issued independently, Moos edited the German otological department, under the title, *Zeitschrift für Ohrenheilkunde*, until his death. In his editorial work he distinguished himself by industry, punctuality, conscientiousness, and unbiased judgment. He published the greatest part of his investigations in the *Zeitschrift für Ohrenheilkunde*. His continuous endeavor to make himself proficient in all branches of his specialty by personal labor and experience fitted him especially for the position of an editor, and has essentially contributed to the success of the *Zeitschrift*. In his practice he was rational, careful, and persevering. He may, perhaps, not have kept pace with the development of the so-called radical surgery of the German and English schools, namely, the thorough treatment of the severe suppurative processes and their consequences to the extent that without doubt he would have done if an exhausting and fatal disease (diabetes) had not weakened his energy during the last years of his life.

In the first seven volumes of the ARCHIVES OF OTOLOGY, 1869–

76, he published thirty-one articles, upon which we need not here dwell. They are compiled in the general index of the seventh volume of the ARCHIVES, page 558. We should like, however, specially to call attention to his paper upon "The Blood-vessels and the Circulation of the Drumhead and the Handle of the Hammer" in the sixth volume, illustrated by two excellent double plates. His last publication in this series was on "The Combined Occurrence of Disturbances in the Organs of Sight and Hearing."

In the second series of seven years (1879–85), the first seven volumes of the *Zeitschrift für Ohrenheilkunde*, he published, according to the compilation in the English edition, forty-seven papers.

In the third series (1886–92) there appeared, according to the compilation in vol. xxi. of the English edition, seven papers by himself and three in conjunction with Dr. Steinbrügge.

Since 1892 Moos communicated six articles in this periodical. Besides the above papers he published a number of articles in Virchow's *Archiv* and other journals, furthermore the following MONOGRAPHS :

1. *Contributions to the Normal and Pathological Anatomy and Physiology of the Eustachian Tube.* Bergmann, Wiesbaden, 1874.
2. *On Epidemic Cerebro-Spinal Meningitis, and in Particular on the Combined Disturbance of Audition and Equilibrium as Sequels of this Disease.*
3. *General Etiology of the Diseases of the Ear and their Relations to General Diseases*, being the 12th chapter of Schwartze's *Handbook of Ear Diseases*, vol. i., pp. 472–600, 1892.

Every page of this excellent work testifies to the industry, accuracy, and profound knowledge of its author. The bibliography alone occupies 17 closely printed pages. Yet Moos, by precision and conciseness of language, has succeeded in doing justice to this extensive material in 112 pages. "The monograph is not only an enumeration of the general causes of disease, but also a description of the anatomo-pathological, and, as far as our knowledge goes, bacteriological changes in the organs under consideration, and, furthermore, a description of the symptoms of disease; it is consequently a pathology of the auditory organ."

All this gives evidence of the great energy and perseverance of the deceased investigator. He has made valuable contributions to all branches of otology; in one, the pathology of the inner ear, both in its normal aad pathological condition, he was a pioneer. His numerous descriptions, illustrated by the most beautiful drawings, contained in the volumes of these ARCHIVES, are not only a monument to their author, but will remain fundamental for future researches. In macroscopic and microscopic anatomy Moos may be placed at the side of the best investigators; in the examination of the pathology of the labyrinth he stands at the head.

Regarding his academic position, we may mention that his scientific work soon furnished him with the title of professor extraordinary. His clinical courses and lectures led to the creation of an official *otiatric policlinic*, which he conducted indefatigably up to his end. In the course of years he made a collection of excellent normal and pathological specimens, which in fine microscopic preparations seems to be unexcelled. There being, as yet, no official professorship of otology at the German universities, the Grand Duke of Baden, to honor his merit, not only gave him the title of counsellor, but appointed him professor honorarius. What he has initiated and accomplished will be the gain of his successors at the university; his scientific achievements remain recorded in the annals of otology.

HERMAN KNAPP.

NEW YORK, Sept. 23, 1895.

MISCELLANEOUS NOTES.

WILHELM MEYER MEMORIAL.

The following letter has appeared in the London medical and lay press :

Sir : With your permission we wish to enlist the interest of your readers in a movement of a somewhat unusual character. Twenty-seven years ago Dr. Hans Wilhelm Meyer, of Copenhagen, recognized that an enlargement of the glands situated between the nose and the throat, to which he gave the name of "adenoid vegetations," was the most fertile cause of deafness and imperfect nasal respiration in children. This discovery represents one of the most important practical advances of modern medicine.

Already many thousand persons, through the timely removal of the enlarged glands, have been saved from lifelong deafness or from the lasting consequences of obstructed respiration ; and it may be safely said that to no one of our contemporaries are we more deeply indebted for the development of a healthy mind in a healthy body of the rising generation than to Hans Wilhelm Meyer. On the recent death of this eminent man it was felt that his unusual merits deserved unusual recognition, and the proposal to erect a statue to him at Copenhagen has met with a most sympathetic reception not only by his fellow-countrymen but also by the medical profession of other countries.

Her Royal Highness, the Princess of Wales, has most graciously consented to give her patronage to the scheme, and has expressed her sincere gratification at the idea that so eminent a fellow-countryman of her Royal Highness should be thus honored.

The Municipality of Copenhagen have promised to grant a suitable site for the statue, and at this moment, in almost every country, committees are being formed for the furtherance of this object.

Whilst as a rule the medical profession, when they wish to honor their great living or dead, confine their appeals to the ranks of the profession itself, in the present instance it is thought that an opportunity should be given to the numberless parents of children whose sound development and the preservation of whose hearing have been rendered possible by Dr. Meyer's discovery, to show their gratitude by contributing towards a memorial in appreciation of his great services.

We therefore, through the medium of your columns, venture to invite subscriptions, which may be sent to our Honorary Treasurer, A. E. Cumberbatch, Esq., F.R.C.S., 80 Portland Place, London, W., and will be duly acknowledged in the journals.

We remain, Sir, your obedient servants,

FELIX SEMON, M.D., Chairman of the Committee.
J. RUSSELL REYNOLDS, M.D., F.R.S., President of the Royal College of Physicians.
CHRISTOPHER HEATH, F.R.C.S., President of the Royal College of Surgeons.
THOMAS BARR, M.D.
HENRY T. BUTLIN, F.R.C.S.
W. B. CHEATLE, M.D.
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Each of the American physicians here mentioned will receive contributions, and the editor of These Archives will transmit them to the treasurer of the English committee.

APPOINTMENTS.

Professor Dr. Koerner of Rostock and Professor Dr. Siebenmann of Bâle have been called to Breslau as successors to Gottstein, but have declined; Professor Dr. Barth of Marburg, however, has accepted the call.

Dr. Ostmann of Königsburg, has been appointed Professor of Otology and Laryngology at the University of Marburg, Prussia, in place of Professor A. Barth.

Gerard Carré, M.D., has been appointed House Surgeon to the Royal Ear Hospital, vice Colin Matheson, M.B., resigned.

BRITISH LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL ASSOCIATION.

The following is the list of office-bearers elected on July 25, 1895: President: Mr. G. Stoker, London; Vice-Presidents: Dr. Ed. Law, London; Dr. Middlemass Hunt, Liverpool; Dr. William Milligan, Manchester; Council, Metropolitan: Dr. W. McNeil Whistler (ex-officio), Dr. Dundas Grant, Mr. Mayo Collier, Mr. Wyatt Wingrave, Mr. G. C. Wilkin; Extra Metropolitan: Dr. J. M. E. Scatliff, Brighton; Mr. John Bark, Liverpool; Honorable Secretary: Dr. Peyler.

DONATIONS AND LEGACIES.

The Royal Ear Hospital authorities have received a donation of twenty guineas from the Merchant Tailors' Company, toward the New Building Fund.

Contents of the last number (Vol. xxvii., 2), **of the Zeitsch. f. Ohrhk.,** issued August, 1895.

H. KNAPP. Two Cases of Fatal Otitic Brain-Disease. (Two chromo-lithographic plates.) Original in April number of this volume.

A. SCHEIBE. Anomalies of Formation of the Membranous Labyrinth in Deaf-Mutes.

IDEM. Histology of Deaf-Mutism from Otitis Interna. (Both papers in this number.)

W. VULPIUS. Influenza Otitis with Epidural Abscesses. (The original appeared in the April number of this volume, p. 131.)

S. VON STEIN. Disturbances of Equilibrium in Ear-Disease (will appear in our January number).

FR. BEZOLD. In the Interest of our Future Otological Literature. Personal Controversy (not to be translated).

Report on Progress.

Report on the Meeting of the German Otological Society, held at Jena, June 1 and 2, 1895. Translated in this issue.

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